The Syntax-Pragmatics Interface of Focus Phenomena in Greek

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This thesis is submitted to SOAS in partial fulfilment

of the requirements for the degree of

Doctor of Philosophy

SOAS

University of London

Department of Linguistics

2012

Declaration for PhD thesis

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Abstract

The present thesis is dedicated to the study of information structure and more specifically the notion of focus with particular reference to the Greek language. Within the context of the cross-linguistic variation pertaining to the means that languages employ to encode focus, this study offers a rethinking of information structure phenomena in Greek relating to the means of encoding focus and focus interpretation contained in word order variation.

In particular, amongst the mechanisms that languages employ to encode focus, I propose that the encoding of focus amid word order variation in Greek is subject to prosodic-discourse mechanisms, rather than syntactic ones: focus in Greek is associated at the level of prosody and interpreted off in a discourse context; specifically, a direct mapping from prosody to discourse. I reason the above arguing that prosody encodes information about the information structure of the sentence; it directly aims to 'anchor' the sentence into its context, providing the link between the meaning of the utterance and its appropriateness in discourse.

To account for the above proposal, I offer a model of componential mapping between syntax, prosody and discourse that facilitates the direct PF-LF correspondence and predicts the position of focus prosodically and syntactically via the application of a special syntax-prosody mapping mechanism (alignment and misalignment). I argue that what gives us focus in Greek is a prosodic condition: focus via stress will always be assigned on the rightmost phonological word of the intonational phrase that contains it due to prosodic requirements.

The above model predicts that the mapping from syntax to information structure underdetermines focus interpretation in Greek: a certain interpretive effect can be realized by multiple word orders. It follows that word order is not a determining factor in realizing focus in the language. I account for the above conundrum suggesting that it might well be the case that word order in Greek is not regulated by traditional accounts of information packaging but it is rather controlled by more abstract or conceptual strategies under which syntactic constituents map into logico-semantic structures: predicative vs. non-predicative mappings (Cécseg & Kiefer 2009, Kechagias 2011).

In essence, I offer an alternative, non-syntactic outlook of focus encoding in Greek, arguing that the encoding of focus interpretation in the language does not employ a designated syntactic focus construction (àla Rizzi 1997).

Abbreviations used in the text

A-P:	Articlulatory-Perceptual System
c-command:	constituent command
C-domain:	Complementizer domain
CL/cl:	clitic pronoun
CLLD:	Clitic Left Dislocation
CLRD:	Clitic Right Dislocation
CP:	Complementizer Phrase
C-I:	Conceptual- Intentional System
D-linking:	Discourse-linking
DP:	Determiner Phrase
ECP:	Empty Category Principle
EPP:	Extended Projection Principle
+F/F-feature:	Focus feature
Foc°:	Focus head
FocP/FP:	Focus Phrase
GB:	Government-and- Binding (Theory)
IP:	Inflectional Phrase
I-Phrase:	Intonational Phrase
LF:	Logical Form
NP:	Noun Phrase
NSem:	Narrow Semantics
NS:	Narrow Syntax
NSR:	Nuclear Stress Rule
PC:	Phonological Component
PF:	Phonetic Form
P-Phase:	Phonological Phrase
p-boundary:	phonological boundary
phi-features:	person, number, case
p-movement:	prosodically driven movement
pro:	pronominal element
SC:	Semantic Component

S-P:	Syntax-Prosody
S-IS:	Syntax-Information Structure
S-PA:	Syntax-Prosody Alignment
S-PM:	Syntax-Prosody Misalignment
Spec:	Specifier
T:	Tense
TP:	Tense Phrase
UG:	Universal Grammar
V-initial:	Verb-initial
VP:	Verbal Phrase
WCO:	Weak Cross Over

Abbreviations used in the glosses

1sg:	first person singular morphology
2sg:	second person singular morphology
3sg:	third person singular morphology
PL:	plural number
ACC/ acc:	accusative case
NOM/nom:	nominative case
GEN/gen:	genitive case
DAT/dat:	dative case
PS:	past tense
fut:	future tense
cl/CL:	clitic pronoun
Prog:	progressive aspect

The symbol (✓) indicates grammaticality, the symbol (*) indicates ungrammaticality, while the symbol (?) indicates infelicity or serious infelicity (??).

Boldface SMALL CAPITALS indicate nuclear stress placement, i.e., the stressed constituent. Focus is designated by the subscript ($_{\mathbf{F}}$) and the focused constituent (or focus domain) isolated in square brackets.

Acknowledgements

Long before I entered the Greek University I knew that I wanted to study Linguistics. While a student of the Linguistics Sector of the Greek Philology Department at the University of Athens, my passion for linguistics was strengthened by two teachers: Prof. George Babiniotis whose teaching inspired by pedagogical aspects of linguistic study and enhanced my background on general and theoretical linguistics. Prof. Dimitra Theofanopoulou-Kontou was the first person who taught me Generative Grammar and convinced me that this was the most exciting subject I had ever encountered during my university studentship.

Joining the M.A in Linguistics at UCL was probably one of the most valuable experiences I had with respect to Linguistics. I am more than grateful to my teachers at UCL: Neil Smith, Hans van de Koot, Ad Neeleman, John Harris, Anna Papafragou, Richard Breheny, Robyn Carston, John Wells and Villy Rouchota. I honestly believe that the education I received at UCL, created a foundation that I will probably never overlook in my entire life. I am mostly obliged to the two syntacticians Ad Neeleman and Hans van de Koot who inspired me with their love and dedication to syntax, 'the UCL Minimalism', in a unique and fascinating way.

I knew that departing on a PhD was not going to be an easy experience, especially if you have to fight with your own 'demons' that try to hold you back! However, here I am, writing acknowledgements which means that this enterprise is nearly over! Above all, I wish to express my gratitude to my supervisor Wynn Chao. I am indebted for her advice, our discussions, her insightful feedback, her patience with my PhD 'phobias', her vast expertise knowledge, her constant, constructive criticism and support. I believe that quite a lot of her advice which seemed to me like a 'utopia' in the beginning turned into a productive finale.

I am also thankful to other people in the department Andrew Simpson, Lutz Marten and Monik Charette for making studying at SOAS part of a friendly community. I am also grateful to the friends I made at SOAS with who several times I discussed linguistics and life matters, Carlo Collella, Gary Scott, Sam Hellmuth, Thomas Doukas. Part of my linguistic education was also the Erasmus program at the

University of Salzburg during the academic year of 1996 and the GLOW Summer School in Linguistics in 2000. I am thankful to all my teachers for their very enlightening lectures and seminars.

Special thanks are due to Anna Roussou and Stavroula Tsiplakou for their useful comments on earlier drafts of the chapters.

I would also like to thank two very special friends Marie Gilbert for proofreading my thesis and Shehzad Ashiq Ali for his IT expertise and help.

Finally, I would like to thank a number of people I met throughout all these years in conferences I participated, in seminars, in coffees, lunches, dinners, home gatherings, over the phone, via email, with who I chatted about linguistics and other related matters: Artemis Alexiadou, Elena Anagnostopoulou, Ianthi Tsimpli, Anna Roussou, Wilfried Lechner, Vina Tsakali, Kristza Szendröi, Marika Lekakou, Michalis Georgiafentis, Irene-Philippaki Warbuton, Stavroula Tsiplakou, Mary Baltazani, Anthi Revithiadou, Amalia Arvaniti, George Kotzoglou, Vassilios Spyropoulos, George Tsoulas, Kook-Hee Gill, Stella Gryllia, Nina Topintzi, Tanya Reinhart, Gaberell Drachman, Angeliki Malikouti-Drachman, Olga Arnaudova, Ioannis Fikias, Amela Camdzic, Ioanna Sitaridou, Evi Sifaki, Axiotis Kechagias, Dirk Bury, Ruth Kempson, Ben Shaer, Frederick Newmeyer, Leora-Ann Barel, Anand Syea, Andrew Linn, Loula Kailas, Niovi Antonopoulou and Evangelia Roussou.

Many times I thought there was not anything else in life beyond linguistics but the company of good friends and work colleagues always gave a different perspective to life. I am also thankful for a very special partner, Alex, for always being there, for his kindest heart, for compassion, for many laughs, for politics, advice, good books, nature, walks, healthy food and cats and for being himself.

Above and beyond all, my deepest gratitude goes to my family, my beloved parents *Κώστας* and *Αντωνία*, my most cherished sister *Βάσω* and my nephew and godson, *Ραφαήλ-Κωνσταντίνος*, whose smile makes the world a much better place for all of us. I owe everything to my family; who I am and what I've become. They have always been there for me in good and bad! I am more than indebted for their unconditional love, constant concern, moral support, financial help and most of all for believing in me! I dedicate this thesis to them with all my love!

Contents

CHAPTER 1: ENCODING FOCUS

1.1 On Information Structure

What is it that we actually convey when we utter a sentence such as '*There's chalk on the floor!*' Different levels of meaning are involved in understanding this sentence. A first level of meaning is the semantic or linguistic meaning, the meaning which is derived compositionally depending on the way words are put together, as in (1).

(1) $[_{TP}$ There $[_{T}$ is $[_{VP}$ $[_{DP}$ chalk $[_{PP}$ on the floor]]]]]

Some linguists would also say the sentence has a reference or extension in the actual world, permitting us to know under what circumstances it is true or false. Those circumstances inform us about the truth conditional meaning, i.e. 'There's chalk on the floor if and only if there is chalk on the floor'.

The other level of meaning is concerned with the interpretation of linguistic meaning in context or discourse. This context can be the immediate discourse that precedes the sentence to be interpreted or it can be situational or available from common background and world knowledge. In this sense, speakers and listeners share a contextual background for interpreting utterances, whereby speakers make guesses about the knowledge accessible to their hearers and the inferences that they will make. Consequently, when the sentence '*there's chalk on the floor!*' is uttered in a classroom, the speaker assumes that the hearer will infer, on top of what has been literally said, that the speaker is actually making a command, such as, 'Pick the chalk up!' instructing him to pick the chalk from the floor.

Linguistic structure reflects these guesses, or to put it differently, these estimates of knowledge that speakers make are grammaticalized through several linguistic devices, such as syntax, prosody, morphology, etc. Speakers *package* their

utterances to take account of these estimates of knowledge. This packaging is called information structure (Chafe, 1976). However, that is not to say that information structure is exclusively defined by inferential pragmatics, as implicated in (1).[1] These have to do with the wider context or discourse. Information structure is part of discourse; however, it is not concerned with the organisation of the discourse itself, but rather with the organisation of a sentence within the discourse.

In fact, the term information structure goes back to Halliday (1967) and has been widely used in the subsequent literature to refer to the partitioning of sentences into categories such as *focus, background, topic, comment,* etc. Most works on information structure agree that the most universally grammaticalized distinction that speakers take on when packaging information is between the information they assume their hearers already know and what they present as new.[2] The already present knowledge has been labelled *given*, *theme*, *background* or *presupposition* and the new/non-presupposed information, the *rheme* or the *focus* (Chomsky 1971, Jackendoff 1972, Prince 1981, Reinhart 1981, Vallduví 1992).

The realization of information structure is particularly variant and versatile across and within languages. For a constituent to be interpreted as new information/focus or even ground information/topic, the grammars of languages employ different syntactic, morphological and intonational/prosodic mechanisms to encode these interpretations (cf. section 1.2). In other words, the linking between the level of sentential or propositional meaning and the level of interpretation of the utterance in discourse, the level of encoding information structure, is facilitated via several linguistics means.

For instance, auditory means may add other functions to the sentential meaning. In particular, intonational/prosodic patterns may influence the interpretation of a sentence. Intonation, the assignment of main stress is a well-known marker of information structure in English, bringing parts of the sentence into focus or highlighting the new information of the sentence.

[1] Speech Act Theory and other broader principles such as the Gricean Maxims (Grice 1975), Relevance (Sperber & Wilson 1986, 1995) are only indirectly linked to the information structure of a sentence.
[2] There is no general consensus in the literature on what and how many information structure categories should be distinguished, or how these can be identified.

(2) a. [$_{F}$ **HÉNRY**] cleaned the kitchen. *English*

b. Given: Someone cleaned the kitchen

c. New: It was Henry.

(3) a. Henry cleaned [$_{F}$ the **KÍTCHEN**].

b. Given: Henry cleaned something.

c. New: It was the kitchen.

(4) a. Henry [$_{F}$ **CLEÁNED**] the kitchen.

b. Given: Henry did something to the kitchen.

c. New: He cleaned it.

What the examples in (2-4) show is that in English the intonational structure marks the information structure of the sentences by assigning different melodic realizations to the parts of the sentence that are new from those that are given, resulting in different information structure partitions of the same sentence. In fact, intonation is one of the means of obtaining or encoding what we call focus interpretation, namely, the semantic/pragmatic property which denotes that a constituent is being interpreted as focused or new/non-presupposed information.

Intonation is not the only means by which focus interpretation is obtained. In other languages, this function of intonation is taken over by specific words, special focus markers, which assign to a constituent of the sentence a focus interpretation or not. Somali, for example, has focus words which include the nominal focus particle *baa*, which follows a nominal and assigns a focus interpretation to it, shown in (5a-b):

(5) a. [$_{F}$ **AMINA BAA**] wargeyskii keentay *Somali*

Amina FOCUS newspaper brought

'**Amina** brought the newspaper'

b. Amina [$_{F}$ **WARGEYSKII BAY**] keentay

baa+ay

Amina newspaper FOCUS + she brought

'Amina brought **the newspaper'**

(examples from Saeed 1997)

Following on from the above, the present thesis is dedicated to the study of information structure and more specifically the notion of focus with particular

reference to the Greek language. Within the context of the cross-linguistic variation pertaining to the means that languages employ to encode focus, this study offers a rethinking of information structure phenomena in Greek relating to the means of encoding focus contained in word order variation.

In particular, amongst the mechanisms that languages employ to encode focus, I propose that the encoding of focus amid word order variation in Greek is subject to a prosodic-discourse mechanism: focus in Greek is associated at the level of prosody and interpreted in a discourse context; specifically, a direct mapping from prosody to discourse (for a schematic presentation and illustration with examples, see section 1.4). I reason the above arguing that prosody encodes information about the information structure of the sentence; it directly aims to 'anchor' the sentence into its context, providing the link between the meaning of the utterance and its appropriateness in discourse. Hence, in this thesis, prosody is considered the tool to signal/express focus, while it is context that determines whether a constituent is focused or not.

To answer for the above claim, I propose a model of componential mapping between syntax, prosody and discourse which accounts for the licensing of focus interpretation in Greek and which predicts the position of focus in the prosodic structure (see section 1.4). In essence, I offer an alternative, non-syntactic outlook of focus encoding in Greek, arguing that the encoding of focus interpretation in the language does not have to employ a designated syntactic focus construction.[3]

1.2 Encoding focus interpretation across languages

In the previous section, I highlighted the fact that languages handle focus interpretation by means of prosodic, morphological or syntactic cues. In this section, after I discuss in more detail the notion of focus, I present a cross-linguistic overview of the focus constructions that languages use to encode focus interpretation. This discussion will eventually reflect on the language in question, namely Greek.

[3] Talking about a designated focus position in the left periphery, I am not debating the left periphery in Greek as a whole. I separate, for instance, lexicalized associations of focus, like wh-movement, which will not be the topic of this thesis.

The discussion in section 1.1 gives us an early clue of the fact that focus must be a quite complex phenomenon. At first glance, from an interpretive viewpoint, it can be defined as a pragmatic entity consisting in the introduction of a piece of new information in the discourse. It is the part of the sentence that is not presupposed by speakers and hearers (Chomsky 1971, Jackendoff 1972). A typical example is the information conveyed by the answer to a wh-question, as in the question-answer pair (6a-b). The new information given in the answer in (6b) is only a part of the answer itself, the rest being the so-called background.

(6) a. Who won the race? *English*
b. [$_{\mathbf{F}}$ **MARTIN**] won the race
c. *Martin won [$_{\mathbf{F}}$ the RACE]

Moreover, as it is shown in example (6c), discourse imposes constraints on the expression of focus. These constraints do not affect (6b) since it is an acceptable answer to the question (6a), forming a felicitous discourse, but exclude (6c) as unacceptable because the object *race* carries the main sentence stress, despite the fact that the sentence contains the new piece of information asked for in (6a). In other words, if focus does not receive the main stress the sentence becomes ungrammatical.

In view of the above, the example in (6c) highlights the fact that focus cannot be just a pragmatic or discourse entity. It appears that whatever constraints are imposed on (6c), they result from the interaction of discourse with other *grammatical* cues or mechanisms that a language may employ. To refer here to the different mechanisms that languages use to encode focus interpretation, I will use the term *focus constructions*.[4] In other words, what was defined as focus interpretation in Section 1.1, - in a nutshell, the semantic/pragmatic property which denotes that an item is being interpreted as focus -, is obtained via different focus constructions across and within languages (prosodic, syntactic, morphosyntactic, etc).

Let us look at these constructions in more detail:

[4] Here the term focus construction is used broadly to refer to all the different means by which focus interpretation is obtained and not just the special syntactic means, as typically described in the literature on focus, e.g. the Hungarian 'focus construction'.

a) Stress/prosody:

The contribution of stress/prosody for focus interpretation was already indicated in section 1.1 (see examples (2)-(4)). It is a standard claim in the literature that focus in English is canonically marked by heavy stress or nuclear pitch accent on the primary stressed syllable (cf. Chomsky 1971, Jackendoff 1972, Rochemont 1986, Selkirk 1986, Ladd 1996:225, Cohan 2000). In most European languages, a focused item is associated with the main sentence stress; it is a property strictly related to the intonational contour of the sentence. The strict interrelation between information structure and intonation has been the topic in several influential studies: Chomsky (1971), Jackendoff (1972), Selkirk (1986, 1995), Cinque (1993), Reinhart (1995, 2006), Lambrecht (1994), Büring (1997), Zubizarreta (1998), Schwarzschild (1999), among others.

To illustrate the discussion, consider the following contrast in (7):

(7) a. The **BÁ**by's crying *English*
b. The baby's **CRÝ**ing

In (7a) the pitch accent (indicated by small capitals and acute accent) is on the word *báby*. By placing the accent on that word, the hearer immediately perceives a context in which the baby is crying and not someone else or among the people that could be crying it is the baby that is crying, answering the question '*who is crying?'*. In contrast in (7b) the accent is on *crýing* and the context is different. This example could answer the question '*what is the baby doing?'*

What is important here is that without the use of intonation there is no clue as to the 'meanings' of (7a-b); the sentence can be ambiguous. The different prosodic realizations of the same sentence make it appropriate in different contexts and these different contexts bring about the disambiguating effect of prosody (argued in Chapter 4: 4.2).

b) Syntactic/cartographic

Nevertheless, prosody is not the only means of encoding focus interpretation. Syntax is one of the most widely used mechanisms that languages employ to encode pragmatic information. The best-known example of such a language is Hungarian. In Hungarian, it is widely believed that focus is marked by a special word order: the so-

called *focus construction* (Szabolcsi 1981, Horvath 1986, É. Kiss 1987, 1998, Lipták 1998, Gervain 2004). Hungarian has a special position for focused element(s) that appears in the left periphery of the clause, immediately adjacent to the finite verb.

In neutral sentences like (8a), the pre-verbal position is occupied by the verbal modifier (VM) *fel*, whereas in focused sentences like (8b), this position is occupied by the focal element, and the VM is behind the finite verb.[5] The focused constituent is assigned a pitch accent, and receives only an *identificational* or *exhaustive* interpretation (cf. É. Kiss 1998).[6]

(8) a. Anna felhívta Sándor *Hungarian*
Anna VM-called Alex-acc
'Anna called Alex'.
b. Anna [$_F$ **SÁNDOR**] hívta fel
Anna Alex-acc called VM
'It is **Alex** whom Anna called.'

In the same spirit, Rizzi (1997) argues that Italian marks not exhaustivity but rather *contrast*: thus in Italian contrastive foci are marked structurally by moving the focal element to a designated position in the left periphery of the clause (see also Cinque 1999, Poletto 2000, Beninca 2001, Belletti 2004 among others). This movement is either overt as in (9a) or covert as in (9b):

[5]By neutral sentence we mean a sentence that carries no pragmatically encoded contextualized meaning or a special intonation : a sentence which has no meaning not already present in the (unspoken) text or makes the least number of presuppositions,

[6]Different types of focus have been identified in the literature. These include semanico-pragmatic distinctions such as contrastive focus (Rochemont 1986) (1a), identificational focus (É.Kiss 1998) (1b), or new information focus (1c). Also, focus can be wide (or broad), as in (1c), or narrow, as in (1a) (Chomsky 1971). In this work, all these are taken to be part of the (general) notion focus.

(1) a. I hate **BROCCOLI**, not zucchini.
b. **A BROKKOLIT** utálom. *Hungarian*
the broccoli-acc hate-I
It's **BROCCOLI** that I hate.
c. A: Do you have any special requirements for food?
B: I [$_F$ hate **BROCCOLI**].

In Chapter 3, I look into the above semantic distinctions in more detail.

(9) a. [$_{F}$ il **TUO** libro] ho comprato (non il suo). *Italian*
the your book have bought-1sg not the (one) of-him
'I bought your book, not his'

b. ho comprato [$_{F}$ il **TUO** libro] (non il suo).
(I) have bought-1sg the your book not the (one) of-him
'I bought your book, not his'

The above analysis constitutes the so-called *cartographic* model, - mainly the clausal architecture is realized by a number of rigid functional projections that carry semantic information -, that traces back its genesis to the seminal work of Rizzi (1997) (see also Ouhalla 1994, Brody 1990, 1995), where a certain interpretation is realized as a projection in the left periphery of the sentence, the extended CP domain. Hence, focus interpretation in this model is directly read off syntactic structure via a dedicated focus projection which carries semantic/pragmatic content (see Chapter 2). In the cartographic model, there is a strict correlation between semantic types of focus and syntactic position, as shown in (8) and (9).[7]

Languages such as Hungarian and Italian, where the words in a sentence are packaged so that they accommodate the expression of focus - among other discourse functions (topics/contrast) -, have been called discourse-configurational (É. Kiss 1995). In general, for languages whose word order is not as rigid as it is in languages like English, the literature has always adopted the idea that the different word orders typically reflect differences in the so-called information packaging, that is, word order is a structural means for expressing or accommodating discourse notions, such as focus and topics (Brody 1990, 1995a; Kiss 1995, 1998 on Hungarian; Tsimpli 1990, 1995 on Greek; Ortiz de Urbina 1999 on Basque; Rizzi 1997 on Italian; Rudin 1991 on Bulgarian; Vilnuka 1995 on Finnish; Zubizarreta 1998 on Romance).

c) Morphosyntax/focus markers

The final means that languages use to encode focus is morphology. African and Asian languages, for example, often use morphological markers, focus particles to realize discourse functions, as in the Somali example in (5) (cf. Ouhalla 1997, 1999 on

[7] Looking at the syntactic reflexes of information structure across languages, semantic types of focus have been associated with particular forms especially for languages that display focus movement (see, e.g., Rumanian in Kiss (1998), Finnish and Hungarian in Vallduví and Vilkuna (1998), Italian, Spanish, Russian, Greek, etc. in Molnár (2002).

Arabic; Drubig 1998; Tuller 1995; Rebushi & Tuller 1999 on Chadic languages; Gill & Tsoulas 2004 on Korean, among others). In the Korean example (10) the morphological focus marker (FM) *nun* appears on the right of the focused constituent. In (11) the FM *á* appears on the left of the verb Gùrùntùm (West Chadic). The FM in the Hausa example in (12) is a non-verbal copular focus marker, which agrees in number and gender with the left-adjacent focused constituent (*nē*/*cē*/*nē* m/f/pl).

(10) Chelswu-ka [$_F$ **YOUNGHEE-NUN**] coahanta *Korean*
Chelswu-nom Younghee-FM like
'It is **Younghee** that Chelswu likes'
(example from Tsoulas & Gill 2004)

(11) [$_F$ **Á HÀFSÁ**] bà nyòolí gyòo-i. *Gùrùntùm (West Chadic)*
FM Hàfsá PROG write message-DEF
'Hafsa is writing the message.'
(example from Hartmann & Zimmermann 2009)

(12) a: Wa$_i$ kukà ganī t$_i$ à kāsuwā? *Hausa*
who 2pl.FOC.PF see at market
'Who did you see at the market?'
b: [$_F$ **YĀRÒNKÀ$_I$ (NĒ)]** mukà ganī t$_i$
boy.of.2m (FM.m) 1pl.FOC.PF see
It was **your boy** we saw'
(example from Jaggar & Green 2003)

d) More than one mechanism within a construction

Nevertheless, the realization of focus interpretation in languages is not just the task of one grammatical mechanism. Cross-linguistically, languages may employ more than one mechanism within a certain focus structure. For instance, English also uses word order in forming clefts which typically put a particular constituent into focus. This

focusing is also often accompanied by a special intonation on the focused element: the subject in the focus construction in (13): [8]

(13) It was [$_{F}$ **JOHN**] who ate fish and chips. *English*

Present-day English is a language with fixed word order: Subject-Verb-Object (SVO, Gass & Schachter, 1989), otherwise called a configurational language, as opposed to Hungarian or Italian mentioned earlier. [9] A change in the word order normally indicates a change in the function and signals focus on a specific piece of information in the utterance.

Along the same lines, Hausa displays both displacement and the presence of a focus-marking morpheme within the same construction, as shown in example (12) above and the one in (14):

(14) [$_{F}$ **TEELÀ$_{I}$ (NEE)**] Bintà zaa tà biyaa t_{i} *Hausa*
tailor FM Binta FUT 3sg.f pay
'Binta will pay the **tailor**.'

More typical is the example of Romance languages which use both word order and stress within a particular focus structure: it is well known that languages differ in whether or not they show non-canonical constituent order in cases of subject focus (Vallduví 1992, Ladd 1996, Zubizarreta 1998, Büring & Gutierrez-Bravo 2002 among others). Languages like Spanish and Italian display subject inversion when the subject is in focus, as in the answers in (15b) and (16b). The subject receives the main stress in the post-verbal position, which remains rightmost. Furthermore, if main stress remains rightmost the subject cannot occur pre-verbally as shown in the ungrammatical example in (16c) in Italian (cf. Samek-Lodovici 2005:12).

[8] In English, a cleft sentence can be constructed as follows: *it* + conjugated form of *to be* + *X* + subordinate clause, where *it* is a cleft pronoun and *X* is usually a noun phrase. The focus is on *X*, or else on the subordinate clause or some element of it.

[9] English has been known as the standard example of a configurational language, whereby the syntactic functions of subject and object can be deducted from their position in the sentence.

(15) a. 'Who bought the newspaper yesterday?' *Spanish*

b. Ayer compró el periódico [$_{F}$**JUAN**].

yesterday bought the newspaper Juan

'**Juan** bought the newspaper yesterday'.

(example from Büring & Gutiérrez-Bravo 2002:2)

(16) a. Who won the race? *Italian*

b. L'ha vinta [$_{F}$ **GIANNI**]

it-has won John

'**John** won the race.'

c. *[$_{F}$ GIANNI] l'ha **VINTA**

John it-has won

'John won it'

(examples from Samek-Lodovici 2005:12)

The above examples represent a special manifestation of the interaction between word order and stress in encoding focus interpretation. They can be analysed as cases of prosodically motivated movement as proposed in Zubizarreta (1998), Samek-Lodovici (2005), Szendröi (2001), among others. According to Zubizarreta (1998), in Spanish, for example, where stress appears to be rightmost, focus assignment and stress assignment can be in conflict when they do not coincide on the same position. Zubizarreta (1998) proposes that the non-focused part of the clause must somehow be scrambled out of its position, so that the focused constituent occupies the position where it bears the main stress. Typically, the order Verb-Object-Subject (VOS) in (15b) is derived from Verb-Subject-Object (VSO) by movement of the defocalized object *el periódico* out of the most embedded position so that the focused subject receives the main stress (discussed in Chapters 3 and 4).

e) Multiple ways of encoding focus* within *the same language:

All the above examples manifest that languages may use more than one mechanism within the same focus structure. It is also interesting that there may be multiple ways of encoding focus interpretation within the same language. We already saw English in

(7) and (13) where the language uses stress, clefts but also association with focus phenomena (even, only, etc) as in the following example:[10]

(17) a. John [$_{VP}$ only [$_{VP}$ introduced **BÍLL** to Sue.]]]. *Engish*
'The only person John introduced to Sue is Bill.'
b. John [$_{VP}$ only [$_{VP}$ introduced Bill to **SÚE**]]
'The only person John introduced Bill to is Sue.'

Moreover, Hungarian (which encodes focus interpretation via a special focus construction as previously shown) exhibits both pre-verbal or *ex-situ* and post-verbal or *in-situ* focus, as shown in (18) and the same is true for Greek as shown in (19):

(18) a. Mari ki nezett maganak [$_{F}$ egy **KALAPOT**] *Hungarian*
Mary out picked herself-dat a hat-acc
'Mary picked for herself a hat'
b. Mari [$_{F}$ egy **KALAPOT**] nezett ki maganak
Mary a hat-acc picked out herself-dat
'It was a **hat** that Mary picked for herself'

(19) a. i geitones ekopsan [$_{F}$ ta **DENDRA**] *Greek*
the neighbours-nom cut-3pl/PS the trees-acc
'The neighbours cut the **trees**'
b. [$_{F}$ ta **DENDRA**] ekopsan i geitones
the trees-acc cut-3pl/PS the neighbours-nom
'The neighbours cut the **trees**'

There is a difference though between Hungarian and Greek in the above examples. In view of the cartographic trend described earlier, in the former, there appears to be a systematic correlation between the syntax and the semantics of focus, in the sense that Hungarian displays a formal opposition between an *in situ* and an *ex situ* realization of the focused constituent. This opposition is assumed to correlate with the difference

[10] Certain semantic operators, including particles like only, also and even, contribute to the meaning of the sentence in ways that depend on the positioning of focal accent in the sentence, (Jackendoff 1972, Jacobs (1983), von Stechov (1990), Krifka (1991), Rooth (1985, 1992) among others).

between two types of focus: *ex situ/pre-verbal* focus is expected to be *exhaustive*, while in *situ/*post-verbal focus is expected to be new-information focus (Kiss 1998).

So the main question is: is focus interpretation in Greek also obtained via a preverbal focus construction similar to Hungarian? Does Greek also have a narrow syntactic, grammar internal, specific focus construction in the left periphery? Moreover, does Greek display the above opposition between function and form, or does focus interpretation in Greek rest mainly on discourse-pragmatic grounds?

To put it in more general empirical terms: if a language has more than one focusing strategy (morphosyntactic and/or phonological), like Hungarian and Greek above in (18) and (19), can each of these be established to correspond to a distinct interpretive goal, - hence providing support for the notion of language as an economy-driven system (Minimalism - Chomsky 1995 and later) -, or are interpretive 'choices' enforced by pragmatic factors?

In the following section, I will give a preliminary view of how Greek encodes focus interpretation and I will present the main claims of the thesis.

1.2.1 Encoding focus interpretation in Greek

Given the cross-linguistic variation in the encoding of focus interpretation described in the previous section, the question that emerges now is: how does Greek encode focus interpretation?

Consider the following examples in (20) and (21).

(20) **SUBJECT FOCUS**

Pjos ekopse ta dendra;

Who cut the trees?

a. [$_{\mathbf{F}}$ i **GEITONES**] ekopsan ta dendra **S**VO

the neighbours-nom cut-3pl/PS the trees-acc

'The neighbours cut the trees'

b. ta dendra ta ekopsan [$_{\mathbf{F}}$ i **GEITONES**] OV**S**

the trees-acc them-cl cut-3pl/PS the neighbours-nom

'The neighbours cut the trees'

(21) **OBJECT FOCUS**

Ti ekopsan i geitones?

What did the neighbours cut?

a. [$_{F}$ ta **DENDRA**] ekopsan i geitones) **O**VS
the trees-acc *cut-3pl/PS* *the neighbours-nom*
'The neighbours cut the trees'

b. i geitones ekopsan [$_{F}$ ta **DENDRA**] SV**O**
the neighbours-nom *cut-3pl/PS* *the trees-acc*
'The neighbours cut the trees'

I assume that Greek uses both syntactic and prosodic means for encoding focus interpretation.[11] I take on that it is primarily encoded prosodically, by means of prosodic prominence, the assignment of main stress on the focused element as dictated by discourse requirements (see (22) below)). By prosodic prominence I mean phonological prominence (which can include word stress, pitch accent on phrases, intonation contours, etc.). Under the scope of the current thesis, without looking into particulars, I refer to the type of prosodic prominence which induces the focus readings available in the sentence (phonologically and not phonetically).

(22) a. *Who looked at Yani?*
[$_{F}$ i **MARIA**] kitakse to Yani
the Maria-nom *look-3sg/PS* *the Yani-acc* **S**VO
'**Maria** looked at Yani'

b. *What did Maria do to Yani?*
i Maria [$_{F}$ **KITAKSE**] to Yani
the Maria-nom *looked-3sg/PS* *the Yani-acc* S**V**O
'Maria **looked** at Yani'

c. *Who did Maria look at?*
i Maria kitakse [$_{F}$ to **YANI**]
the Maria-nom *looked-3sg/PS* *the Yani-acc* SV**O**
'Maria looked at **Yani**'

[11] Overall, I regard that the realization of information structure (not just focus) in Greek is the result of the interplay of the morphosyntactic, syntactic, prosodic and discourse components, by means of mapping processes across the representation of these components (see Chapter 5 for full discussion).

Hence, the assignment of prosodic prominence is the main indicator for the partition of the utterance into new vs. given information in the language. In this thesis I assume that prosodic prominence (the assignment of main stress) is a relational property with pragmatic import dividing focused from presupposed information.

In Greek, primary stress falls by default on the most embedded constituent (Baltazani 2002). [12]/[13] However, as shown in examples (22a-c) main stress can also fall on any constituent, not just the syntactically most embedded, depending on the contextual requirements. Hence, the identification of focus in the sentence follows from contextual considerations, i.e. discourse requirements. Context decides and prosody signals focus accordingly. The fact that stress can be on the subject in (22a) and on the verb in (22b) results in a different information structure partitions from the one resulting if stress was to be assigned on the most embedded constituent, i.e. the object.

Yet, as evident in the examples (20) and (21) word order is also involved in the expression of focus. In (20a) and (21a) the focused constituents have been preposed to the left periphery of the sentence, whereas in (20b) and (21b) they remain *in-situ*. This means that Greek uses more than one grammatical mechanism in a construction similar to Romance (discussed in examples (15-16)) but also has multiple ways of expressing focus within the language, such as Hausa and Hungarian, exhibiting both pre-verbal/*ex-situ* and post-verbal/*in-situ* foci realizations.

With respect to the above observations, previous accounts of Greek have encoded focus interpretation cartographically through a designated projection in the left periphery, similar to Hungarian focus, mainly ignoring the contribution of prosodic factors (Phillipaki-Warbuton 1982; Alexiadou 1999; Baltazani 1999, 2002; Tsimpli 1990, 1995, 1997, Tsiplakou 1999 etc). In the same manner, semantic associations of focus have received a decompositional treatment in the above literature on Greek focus, whereby the preverbal position is exclusively associated

[12]According to Baltazani (2002) in a typical declarative sentence uttered in an all-new/broad focus context, the last word, carries the H*+L nuclear pitch accent which is realized as a fall from high pitch, with the fall being completed by the end of the accented syllable, e.g. *i Melina milai vrazilianika* (Melina speaks Brazilian) where no word carries narrow focus.

[13] In subject inverted orders (VS) heavy subjects show a tendency to be postposed. Stress also falls on the most embedded constituent within the heavy subject. Consider the example in (i) where the main stress falls on the final constituent:

(i) To 1880, arhisan ta piramata tis atomikis **VOMVAS**
In 1880, started-3pl the experiments-nom the-gen atomic-gen bomb-gen
'In 1880 the experiments of the atomic bomb started'.

with contrastive or exhaustive interpretation and the postverbal position with a new information interpretation.

In contrast, here I argue that there is an important difference between Greek in (20-21) and Hungarian in (18). A closer look at the evidence shows that the licensing of focus in Greek is more flexible than previously thought. Example (20) is a case of narrow focus on the subject. The flexibility in the position of focus (preverbal and postverbal) is mainly associated with the lack of any interpretive restrictions. The focused subject can appear in either position without any difference in the interpretation; in both cases it answers the question '*who cut the trees?*' The same holds for the examples in (21). The focused object DP can appear either postverbally (21a) or preverbally (21b) with no difference in the interpretation; it is perfectly acceptable as an answer to the question '*what did the neighbours cut?*' in both positions.

Moreover, both preverbal and postverbal focus structures in (20) and (21) are acceptable with either new-information or contrastive/exhaustive focus interpretations depending on the context question. For instance, a context question inducing a contrastive subject focus reading for (20a) could be *'Did the gardener cut the trees?- No, the neighbours cut the trees'*. Hence, these examples provide evidence that the contrastive or exhaustive interpretation is not exclusively associated with the *ex-situ* or displaced/moved position. In other words, the contrastive interpretation is not a necessary and sufficient condition of the contextual licensing of focus movement to the preverbal position (Chapter 3).

I argue that the above attested flexibility in the encoding of focus in Greek with respect to both the syntactic positioning of focus and its semantic manifestations is the result of the interactions of syntax, prosody and discourse and the way these components are mapped.

To describe the interactions across components as regards the realization of focus (and effectively information structure) in Greek, I put forward a working hypothesis, which I call the *underdeterminacy* hypothesis. The underdeterminacy hypothesis mainly explains the way in which representations across components (syntax/prosody/information structure) are mapped: whether the interactions across components are direct (one-to-one) or indirect (one-to-many or many-to-one). These interactions involve the syntax to information structure mapping, the syntax to prosody mapping and the prosody to discourse mapping (cf. section 1.4).

Building on examples such as (20) and (21) which constitute the empirical basis of this thesis, I argue that the mapping from syntax to information structure (henceforth S-IS Mapping) in Greek underdetermines focus interpretation in two ways, outlined under the S-IS underdeterminacy hypothesis in (23):

(23) **S-IS Underdeterminacy Hypothesis:**

i. The same word order can be subject to different focus interpretations.

ii. A certain focus interpretation can be licensed via multiple word orders.

Consider the examples in (24) standing for clause (23i) of the S-IS Mapping:

(24) a. i mitera katharise to spiti **SVO**
the mother-now clean-3sg/PS the house-acc
'The mother cleaned the house'

b. Pjos katharise to spiti?
Who cleaned the house?
[$_{F}$ i **MITERA**] (katharise to spiti)

c. I mitera kimithike i katharise to spiti?
Did the mother sleep or cleaned the house?
(i mitera) [$_{F}$ **KATHARISE**] (to spiti)

d. Ti katharise i mitera?
What did the mother clean?
(i mitera katharise) [$_{F}$ to **SPITI**]

e. Ti ekane i mitera?
What did the mother do?
(i mitera) [$_{F}$ katharise to **SPITI**]

f. Ksero ti magirepse i mitera, alla ti KATHARISE?
I know what the mother cooked. But what did she clean?
(i mitera katharise) [$_{F}$ to **SPITI**]

g. Mirizei freskada!
It smells fresh!
[$_{F}$ i mitera katharise to **SPITI**]

A particular SVO structure 'the mother cleaned the house' in (24a) - given the different stress assignments in (24b-g) – can give rise to different information structure partitions. In other words, one syntactic structure can give rise to many interpretations, given the different stress assignments which are enforced by different discourse requirements (context questions).

In (24), I assume that the syntactic structure SVO remains unchanged (or *in-situ*) and that stress can fall into any constituent of the sentence, depending on contextual requirements. One could argue that different stress corresponds to different structures. However, here, I do not assume a particular syntactic focus analysis or a prosodically-driven movement analysis that maps syntax to interpretation. What I assume is that the stress can fall in different places due to contextual requirements; different melodic realizations of the constituents of the same sentence under different contextual requirements can result in different information structure partitions, assuming a one-to-one mapping between prosody and discourse (to be discussed in section 1.4).[14] Examples (24d-g) can also be considered as the result of focus ambiguity resulting from rightmost stress falling on the most embedded constituent (Selkirk 1995, Reinhart 1995).

It follows that in (24) as outlined in (23i) that the S-IS mapping underdetermines focus interpretation in a one-to-many fashion. Similarly, the mapping from syntax to prosody (S-P mapping) is also one-to-many, since the prosodic/intonational contour of its utterance is ultimately related to its information structure, i.e. the partition into focus and given information.

Consider now the following pattern in (25) which stand for clause (23ii) of the S-IS underderminacy Hypothesis:

[14] See Roussou & Tsimpli (2006) for an analysis where different syntactic structures correspond to different information structure partitions.

(25) Pjos katharise to spiti?
Pjos-nom clean-3sg/PS the house-acc?
Who cleaned the house?

a.	[$_{\mathbf{F}}$ i **MITERA**] katharise to spiti *the mother-nom clean-3sg/PS the house-acc*	**S**VO	✓
b.	[$_{\mathbf{F}}$ i **MITERA**] to-cl katharise to spiti	**S**clVO	✓
c.	(to spiti to-cl katharise) [$_{\mathbf{F}}$ i **MITERA**]	OclV**S**	✓[15]
d.	(to-cl katharise) [$_{\mathbf{F}}$ i **MITERA**] to spiti	clV**S**O	✓
e.	(to spiti) [$_{\mathbf{F}}$ i **MITERA**] to-cl –katharise	O**S**clV	✓
f.	[$_{\mathbf{F}}$ i **MITERA**] to spiti to-cl katharise	**S**OclV	✓
g.	(katharise) [$_{\mathbf{F}}$i **MITERA**] to spiti	V**S**O	?
h.	(to spiti katharise) [$_{\mathbf{F}}$ i **MITERA**]	OV**S**	?
i.	[$_{\mathbf{F}}$ i **MITERA**] to spiti katharise	**S**OV	??
j.	to spiti [$_{\mathbf{F}}$ i **MITERA**] katharise	O**S**V	??
k.	(katharise to spiti) [$_{\mathbf{F}}$ i **MITERA**]	VO**S**	*

The examples in (25a-i) show that a certain discourse requirement (e.g. subject focus) can be satisfied by a number of structural arrangements.[16] It follows that in (25) as outlined in (23ii) the S-IS mapping underdetermines focus interpretation in a many-to-one fashion: a certain focus interpretation (subject focus) is not exclusively licensed via a pre-configured word order. Information packaging is flexible in the sense that a given interpretive effect - subject focus - can be achieved by a number of word orders and that there is, most probably, no predetermined specific position in the left periphery that can exclusively license such interpretation (Chapter 2: 2.4.2).

As evident from the above discussion, the S-IS and the S-P mappings in Greek are indirect. The only mapping that is direct/one-to-one is the mapping from prosody to discourse, - there is no underdeterminacy in this mapping -, thus, enabling us to

[15] The presense of the clitic in (24c) becomes mandatory if we compare it with the cliticless OVS in (24h) which results in serious infelicity. (24d) is a case of clitic right dislocation and its corresponding cliticless right disclocation in (24g) is infelicitous but not ungrammatical. (24i) is much less acceptable compared to the SVO in (24a) but could improve if the focused subject is followed by a pause. (24j) could be grammatical if the object was clitic doubled. VOS in (24k) is unacceptable because the accent on *mitera* does not raise a subject focus interpretation. The structure is not felicitous in a subject focus context. A full illustration and explantation of (24) will be given in Chapter 5: 5.5

[16] Of course, not all of them are equally acceptable but the important point here is that the grammar of Greek allows for more than one option for the same interpretation.

argue for a direct correlation between prosody and discourse or otherwise a direct stress-focus correspondence (see sections 1.3 and 1.4).

Anticipating the discussion to follow in subsequent chapters, the examination of the S-IS underdeterminacy Hypothesis crucially predicts that word order in Greek is not the most crucial factor for the realization of information structure, since the S-IS mapping is always flexible. The interaction between the structural resources and the phonological resources in realizing information structure ranks prosody a much more decisive factor in the realization of focus than word order (Chapter 5:5.5).[17]

An important implication resulting from the above predition is the following: if the S-IS mapping is indeed inconsistent and underdetermines focus interpretation in an indirect fashion, and as a result word order in Greek is not directly regulated by information structure, then the question is what regulates word order in Greek? In Chapter 5, I argue that word order in Greek is not just regulated by traditional information packaging, but it may well be regulated by more abstract or conceptual strategies.

At this point let me expose the main claims of the thesis: Given the discussion so far, I argue that - in the context of language variation pertaining to the means languages use to encode focus interpretation (section 1.2) - Greek handles focus interpretation differently from other languages, such as Hungarian. I argue that focus interpretation in Greek is not encoded via a specific focus construction: the Greek left periphery does not necessarily implicate a specialized, cartographically encoded focus construction, in the sense that focus movement is not necessary to achieve focus interpretation (Chapter 2: 2.4).

The question that immediately arises is the following: if focus interpretation in Greek is not encoded via a cartographically encoded focus position in the left periphery, then how is focus interpretation obtained in the language?

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[17]The other factor affecting information structure in Greek (however, focus indirectly) is the existence of resumption: The morpho-syntax of Greek can also affect the information structure partitioning. Clitic duplication affects the interpretation of syntactic objects; the clitic doubled object cannot be new information and it is therefore given. We will look at resumption in more detail in Chapter 5.

(i) a. ***Ton*** *Yani* ***ton*** kitakse [$_{F}$ i **MARIA**]
the Yani-acc *him-cl-look-3sg/PS* *the Maria-nom* OCLV**S**
'Maria looked at Yani'

I argue that focus in Greek is associated at the level of prosodic structure - assuming a direct mapping between the phonological representation (stress) and the pragmatic representation (focus) - and interpreted off output representations of the mapping from prosody to discourse. In this respect, the interpretation of focus in Greek takes as input representations of prosody into discourse (Chapter 4).

To answer for the above claim, I propose a model of componential mapping between syntax, prosody and discourse which accounts for the licensing of focus interpretation in Greek. This model has two mechanisms: (a) the prosody-discourse mapping which constitutes the level at which focus interpretation is encoded, and (b) the syntax-prosody (henceforth S-P) mapping, the level where focus is signalled via stress, which consists of two processes: the processes of alignment and misalignment. Mechanism (a) mediates the direct relation between stress and focus and mechanism (b) predicts the position of focus in the language in the prosodic structure via the position of stress. I propose that the realization of focus by means of stress *always* occurs *rightmost* in prosodic structure, even when focus does not occur in the most embedded syntactic position. This is enabled via the misalignment mapping, which facilitates the stress-focus correspondence, by aligning the non-final focus element in syntactic structure with the rightmost element of the phonological phrase that contains it in the prosodic strcture. Hence, stress does not have to be always rightward, but as far right as possible within the prosodic phrase that contains it. This analysis is movitated by prosodic conditions, such as the directionality of stress in Greek, the prosodic status of post-focal material and focus induced effects on prosodic phrasing (Chapter 4).

This proposal accounts uniformly for all instances of focus (clause-initial, internal and right-peripheral) across the sentence. It also crucially predicts that the underdeterminacy with respect to focus interpretation (as in (25)) is a consequence of the fact that focus interpretation runs off prosodic structure (Chapter 4:4.2).

The proposed model applies uniformly to most cases of the interaction between syntax (word order), prosody (stress) and discourse amid word order variation in Greek (Chapter 5). However, certain orders, such as Verb-initial orders (henceforth V-initial) seem to resist a stress-focus correspondence analysis: there is a mismatch between stress assignment and focus interpretation. Stress on the final constituent does not felicitously realize argument focus (cf. (25h) repeated here in

(26)); rather the sentence is better interpreted as an answer to an all-focus context question '*what smells so clean?*':

(26) (katharise to spiti) [$_{F}$ i **MITERA**] VO**S**
clean-3sg/PS the house-acc the mother-nom
'The mother cleaned the house'

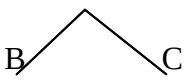
The above behaviour is not due to a cartographic ban, since the proposed model predicts flexibility in the realization of arguments, it predicts underdeterminacy in the realization of focused arguments (see, for instance, (25a) and (25c)). In Chapter 5, I account for the above puzzle by suggesting that it might well be the case that word order in Greek is not only regulated by traditional accounts of information packaging, i.e. subject to a pragmatic partitioning, but it may be subject to more abstract, logico-semantic or conceptual strategies under which syntactic constituents map into logico-semantic structures: predicative vs. non-predicative mappings (in the spirit of Gécseg & Kiefer 2009 and Kechagias 2011).

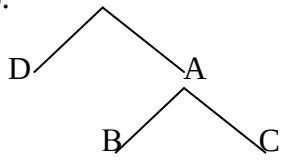
1.3 Minimalism and Theoretical Modifications

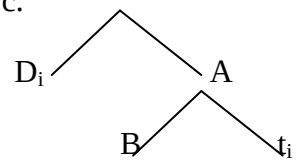
The most important assumption at the heart of the machinery of generative grammar, from the very early stages of the theory (Chomsky 1965, 1981), is that syntax, the structure building part of the language, is the sole generative capacity, the fundamental component of the computational system, which can be studied independently from meaning and context; everything else, the phonological and semantic components are interpretive. According to this view, the infinity of language arises from exactly one component of the grammar: the recursive phrase structure rules (or later in the Minimalist Program, the application of 'Select' and 'Merge'). Whatever recursive properties phonology and semantics have, they are a reflection of interpreting the underlying recursion in syntactic phrases.

Chomsky asserts that the faculty of language consists of a cognitive system that stores information (the computational system and the lexicon), and some performance systems - the 'external' systems: Sensor Motor (SM) and Conceptual-Intentional (C-I) interacting with the cognitive system at two interface levels of PF

and LF respectively - responsible for using and accessing information (Chomsky 1995)[18]. He takes a particular language L to be a procedure of constructing pairs (π, λ) out of lexical items selected from the lexicon and mapped onto a 'Numeration' to be introduced into the derivation by the computational system. So, what syntax does with these lexical items is to combine them to form new, larger units or constituents. This happens by applying the operation Merge, which happens to be the only operation postulated in current minimalist syntax (Chomsky 1995, 2000, 2001, 2005, 2006). This operation takes two linguistic elements and combines them, thereby creating a new unit (27a). Merging another element to that unit extends the derivation by one element and forms another unit. Another element can be merged to this unit and so on. The operation allows only one unit to be merged at a time creating binary structures. When extending the derivation by one element, this element can be either new from the lexicon as in (27b), or from the existing derivation, an element that has already been merged before like in (27c):

(27) a. 

b. 

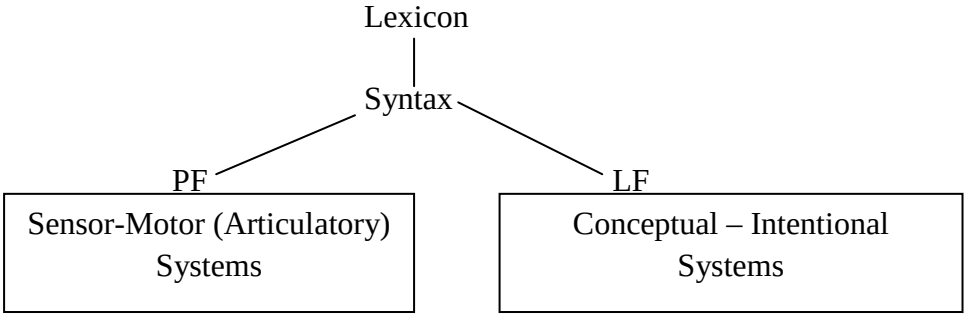
c. 

The first type of Merge is referred to as External Merge (EM), whereas the second type is called Internal Merge (IM). Since in IM an element leaves its original position in the derivation and ends up in another position (leaving behind a trace or copy), this operation is typically referred to as Move.[19] Hence, once the syntactic structure is completed (via merge) it is delivered to the PF and LF interfaces where it acquires phonological and semantic content:

[18]The Conceptual-Intentional system is responsible for the processes of reasoning, planning, forming and expressing intentions, perceiving sentences in context, incorporating pragmatic considerations, world knowledge, computing conversational implicatures, etc along the lines of Chomsky (1995 and later), Jackendoff (1997) and Reinhart (2007), Neeleman & van de Koot (2009).

[19]'Merge' builds the syntactic structure of the sentence. The derivation of the sentence proceeds from the lexical/thematic domain (the VP domain) to the inflectional domain (TP/IP), and on top of that the complementiser domain (CP domain) is generated (or 'the left periphery'), as in the tree structure in (1.9). The CP is typically analysed as the domain where sentence type (relative, embedded, question) and pragmatic (topic, focus etc) interpretation is encoded.

(28) STANDARD MODEL OF GENERATIVE GRAMMAR



Chomsky takes the convergence of a derivation to involve *only* its interpretability at both interface levels; therefore he adopts the obvious hypothesis that there are 'no PF-LF interactions relevant to convergence'. This seems to leave no space for any direct communication between PF and LF, since on this view the performance systems access phonetic and semantic information independently.

In Chomsky (2000, 2001) the syntactic structure is built in computational cycles, or phases. The core of this idea is that the building of syntactic structures is not holistic; rather, it happens through smaller building processes or cycles. Once such a cycle is completed, its output, that is, the generated structure, is transferred to the PF and LF interfaces. Once this transfer has taken place, it cannot be accessed anymore. This is the so-called 'Phase Impenetrability Condition' (Chomsky 2001):

(29) PHASE IMPENETRABILITY CONDITION

In phase α with head H, the domain of H is not accessible to operations outside α. Only H and its edge (specifier(s)) are accessible to such operations.

Phase = {v*P, CP}

The phases are v*P and CP. According to Chomsky C is shorthand for the region that Rizzi (1997) calls the left periphery, and v* is the functional head associated with full argument structure, transitive and experiencer constructions. In this way, the edge of a phase is syntactically transparent, while the complement of a phase head is syntactically opaque. Under the PIC, evacuation from a phase is therefore reliant on an intermediate stage in the derivation in which the displaced occurrence occupies a

position at the edge of the phase. Again, despite this theoretical advancement, the model does not allow any direct interaction between the interfaces.

In Chomsky (2005, 2006), all levels of grammar except for interface levels are discarded, so there is only one computational cycle. The syntactic structure is built until a phase is completed; after that it is transferred to the C-I and SM interfaces, where it is interpreted. Once the information has been transferred, it cannot be accessed anymore, which is captured by the PIC. The concept of a numeration became unnecessary in this model because the theory does not rely on the relevant type of economy anymore. Chomsky postulates that all Merge operations are driven by edge features (EFs). As such, EFs are irreducible primitives of Universal Grammar. Thus, EFs of phase heads cause Merge.

EFs of phase heads, which trigger all A'-movement, are indiscriminate – they can attract any goal in their search domain, i.e. any element in the clause. This is possible because there is no feature matching with EFs. The final interpretation of the moved element depends on the position where it eventually ends up. Thus, the computational system generates syntactic structures freely. Their interpretation and, potentially, their deviance are determined at the interfaces. As Chomsky remarks, 'the only empirical requirement is that SM and C-I assign the interpretations that the expression actually has, including many varieties of deviance' (p. 10). This is indeed a big advantage of the current theory.

Still, none of the above advancements of Chomskian grammar allow for a direct interaction between PF and LF. The only communication is by way of syntax. No principles, filters, rules or definitions that can simultaneously and directly refer to both pragmatico-semantic and prosodic information are allowed, since there is no place in the grammar where such filters or principles could operate.

Consequently, within the aforementioned framework, information structure and more specifically focus interpretation has been directly and unambiguously encoded in the syntactic representation, whereby the S-IS mapping is always one-to-one (cf. Chomsky 1971; Jackendoff 1972; Antinucci and Cinque 1977; Abraham et al. 1986; Horváth 1986; Rochemont 1986; Diesing 1992; Büring 1997; Kiss 1998b; Rizzi 1997; Vallduví & Vilkuna 1998; Zubizaretta 1998). The claim that information structure is syntactically encoded and feeds into the PF and LF component is often referred to as the two-interpretive interface hypothesis:

(30) *Two-Interpretive Interface Hypothesis:*

The syntactic structure is interpreted at its interfaces, PF and LF.

On the one hand, the advantage of the two-interpretive interface hypothesis is that it is based on a strictly modular and therefore restrictive model of grammar.

In this approach, the integration of discourse functions, such as focus, in the grammar is represented by Phrase Structure through distinct functional projections, i.e. FocusP. Focus constituents move to preverbal positions where they check their discourse related features. In effect, the element that is in focus carries a [+ F] feature and moves to the focus head to check this feature. This was the common idea proposed for a considerable number of languages, the differences being (i) the exact position of the FocusP with respect to the other functional projections in the hierarchy, (ii) the possible syntactic syncretism with functional heads bearing other features (I or C), and (iii) whether the movement of the focused constituent or the verb is overt (narrow syntax (henceforth NS)) or covert (in LF). (cf. Brody 1990, 1995a; Kiss 1995a on Hungarian; Ortiz de Urbina 1999 on Basque; Ouhalla 1994 on Arabic; Tuller 1995 and Rebushi & Tuller 1999 on Chadic; Tsimpli 1990, 1995, 1997 on Greek; Vilkuna 1995 on Finnish, among others).

More recent syntactocentric analyses of discourse functions belong in the cartographic trend (highlighted in Section 1.2.1). The cartographic analyses of the left periphery, most probably, (Rizzi 1997, 2004; Cinque 1999), (see also Ouhalla 1994, Brody 1990, 1995), have attributed to the portion of the clausal structure above the IP level-the CP level-a highly articulated functional architecture, resulting descriptively in the derived highly complex distributional patterns of various operator types. Hence, a certain interpretation is realized as a projection in the left periphery of the sentence; the focused constituent occupies a specific projection in this enriched split-CP clausal structure along with other discourse functions, e.g. topics, with the ambition to explain a number of phenomena within and across languages, accounted for by the left periphery in a universal and uniform character. The great advantage of this approach is that it attributes a universal character to the focus construction via a uniform hierarchy of the left periphery across languages (as in the structure in (30)), in the sense of Cinque's (1999, 2004) Universal Hierarchy for adverbs.

(31) Split-CP: [ForceP [TopP* [FocP [TopP* [FinP [IP….

On the other hand, the disadvantage of the two-interpretive interface hypothesis is that it has been driven by theory-internal rather than empirical considerations. To put it more bluntly, the claim that phonology interacts with meaning only via syntax and vice versa might be empirically inadequate. It has long been observed (e.g., van Riemsdijk & Williams 1986, Woodbury 1987, Winkler 1997) that information structural phenomena may pose a challenge to this hypothesis since they seem to allow for a direct interaction between the different modules. There is, for example, the phonological or prosody-based account, which proposes that some movement operations are not feature-driven and do not occur in syntax, but are rather phonologically driven and occur in the phonological component (cf. the discussion in section 1.2: Zubizarreta 1998, Szendrői 2001, 2003, Erteschik -Shir 2006).[20]

Focus is one of the linguistic phenomena which appear to require a multidimensional approach to grammar; it is not unique to syntactic structure or to the interfaces. We saw in section 1.2.2 that focus is realized with stress or accent in a number of languages and many authors have assumed that a focused constituent will always carry the main stress (e.g., Cinque 1993; Reinhart 1995; Zubizarreta 1998; Szendröi 2001, 2003). Syntactic/cartographic approaches circumvent this problem by postulating the focus feature [+F]. The focus feature is an index that allows the two interfaces to 'see' each other. However, we saw that later advances in Minimalist syntax dispense with discourse related features altogether (Chomsky 2005, 2006).

Moreover, another view suggests that a direct correspondence exists between phonology and interpretation without recourse to syntax as hypothesized by Schwarzschild (1999) and Büring (2007) for givenness-related phenomena from a semantic perspective. The exploration of direct interaction between the different components shows that some phenomena do not require the representation of pragmatic information in syntax, such as givenness phenomena including some forms of ellipsis (see Winkler 2006, Gergel, Gengel & Winkler 2007 for discussion).

[20] Despite the advancements in Chomsky 2005/2006 attributed to the fact that EFs of phase-heads are indiscriminate, that is, they can attract any goal in their search domain, and syntax receives certain autonomy by disallowing discourse-related driven operations to take place within NS and simultaneously, the clausal skeleton is not extended through extra functional projection for the accommodation of discourse related elements, it is still assumed that the final interpretation of the moved element depends on the position it eventually ends up. In other words, the core idea is that an element only receives an interpretation when it is in the 'correct' position; when it has checked the features of the relevant head and moved to the specifier of that position.

Another issue that the two-interpretive interface hypothesis has to face with evidence such as the ones presented in (24) for Greek, repeated here in (32):

(32) a. i mitera katharise to spiti SVO
the mother-now clean-3sg/PS the house-acc
'The mother cleaned the house'

b. Pjos katharise to spiti?
Who cleaned the house?
[$_{F}$ i **MITERA**] (katharise to spiti) **S**VO

c. I mitera kimithike i katharise to spiti?
Did the mother sleep or cleaned the house?
(i mitera) [$_{F}$ **KATHARISE**] (to spiti) S**V**O

d. Ti katharise i mitera?
What did the mother clean?
(i mitera katharise) [$_{F}$ to **SPITI**] SV**O**

e. Ti ekane i mitera?
What did the mother do?
(i mitera) [$_{F}$ katharise TO **SPITI**] S**VO**

f. Ksero ti magirepse i mitera, alla ti KATHARISE?
I know what the mother cooked. But what did she clean?
(i mitera katharise) [$_{F}$ to **SPITI**]

g. Mirizei freskada!
It smells fresh!
[$_{F}$ i mitera katharise to **SPITI**]

Here the representation of focus is not one-to-one but ambiguous: one-to-many. The sentence in (32a) under a given intonation can give rise to more than one interpretation, more than one possible foci, - the focus set of the sentence (Reinhart 1995, 2006). The possible foci of an utterance are determined by the grammatical properties of the utterance, albeit not directly by its syntactic representation. Focus is encoded prosodically in the above examples, via a prosody-discourse mapping (cf. Section 1.4). Recall that in Section 1.2.1, I argued that this mapping is direct in Greek, in the sense that it enables a direct stress-focus correspondence.

Consequently, a direct relation between stress and focus can only be captured in a framework where phonological information, which is eventually relevant for the interaction of the grammar with the articulatory and auditory mechanisms, is independent of syntactic or semantic information, which in turn interacts with the C-I system. Within such a framework, syntactic information and phonological information are simultaneously available in the grammar, and the direct relation between stress and focus can easily be accounted for. In line with Szendrői (2001, 2003), Brody (2003), Reinhart (1995, 2006), Jackendoff (1997, 2003) among others, I adopt the position that direct interaction between PF-LF should be possible, in the sense prosodic information should access the C-I interface, in order to capture the fact that prosodic information has an effect on pragmatics/discourse; it can be relevant in defining pragmatic meaning.[21] The claim that prosody anchors the utterance in its discourse context and accommodates pragmatic information is discussed in Chapter 4.

The formal description of a mapping that facilitates a direct relation between prosody and discourse is adopted here in Reinhart's (1995) Focus Interpretation Principle in (33):

(33) **Focus Interpretation Principle:**

The focus of a clause is any syntactic constituent that contains the intonational phrase corresponding to that clause (Reinhart (1995:65)).

1.4 The Model of Analysis

Building on the modifications proposed in the previous section, I outline here the model of componential mapping between syntax, prosody and discourse that accounts for the licensing of focus interpretation in Greek. The architecture of the model is presented in Figure 1 below:

[21] It is also well known that intonational patterns may have different pragmatic effects (Bolinger 1965; Halliday 1967; Jackendoff 1972; Ladd 1996; Lambrecht 1994; Steedman 2000).

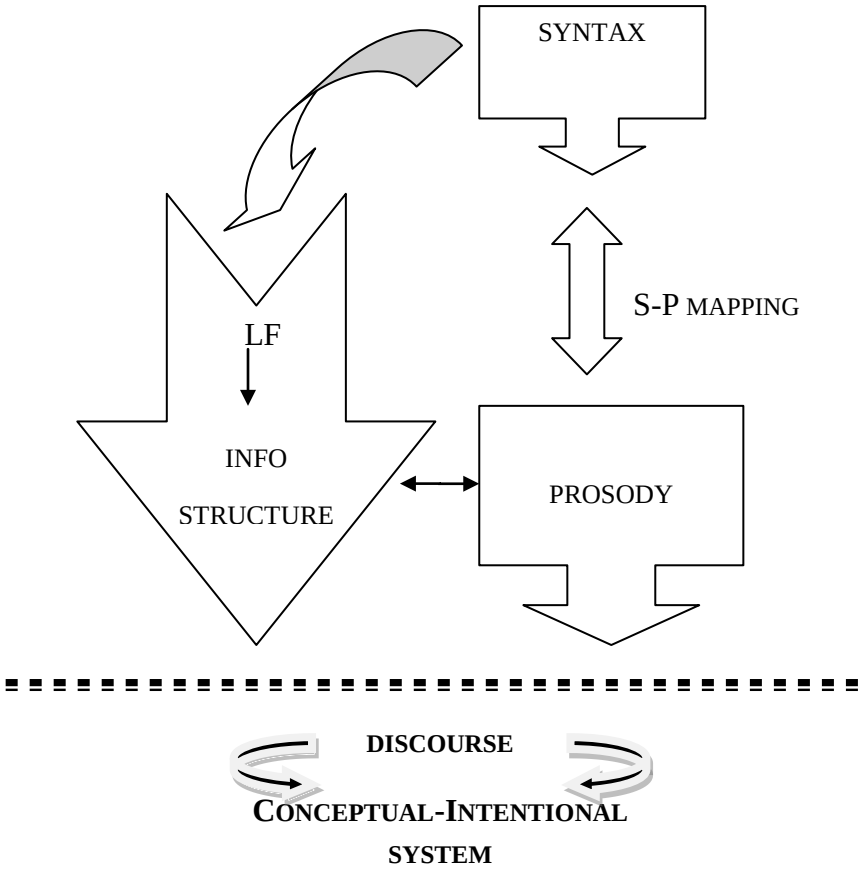


Figure 1: The Grammar of Focus marking

In Figure 1, I assume that information structure is part of (feeds into) the C-I interface along with the wider discourse it is associated with.[22] In other words, it is asserted that information structure in this account is a pragmatically determined level of representation, which is accessed both by the grammar and the extralinguistic context.[23] I also assume that prosody directly feeds into the C-I interface (via a prosody-discourse mapping), in the sense that prosody anchors the sentence into its discourse context (section 1.3).

In Figure 1, I take on that lexical items carry out the following processes before the utterance accesses the C-I interface: the computational system builds

[22] Information structure is construed broadly as comprising structural and semantic properties of utterances relating (i) to the discourse status of their content (ii) the actual and attributed attentional states of the discourse participants (iii) and the participants' prior and changing attitudes (knowledge, beliefs, intentions, expectations, etc).

[23] Although there is no general agreement among the linguists on the exact nature of the Information structure, both with respect to the Language Faculty and to its relation with the other levels of representation, I follow Vallduví (1992), Reinhart (2007), Neeleman & van de Koot (2009) which agree that it is part of the grammar external C-I system which interfaces with syntax possibly at the point of LF.

structures and provides the interfaces with multiple options, i.e. word orders. Initially, the items are merged together as shown in section 1.3 (schema 27) and the necessary movement operations are performed (in essence, syntactic movements for various reasons – independent of focus – derive the various word orders). I assume that the rich morphological system of Greek, namely, the existence of pro-drop parameter (the availability of null subjects, the absence of that-t effects and the presence of postverbal subject, Rizzi 1982), the overt licensing of morphological case (nominative/accusative) and the inflectional morphology (presence of verbal agreement suffixes) allows for flexibility in the possible word order options built by the operations *Merge* and *Agree* (Chomsky 1999 and later, cf. Section 1.3).[24] In this respect, the proposition 'Maria looked at Yani' exploits the rather liberal distribution of arguments in different positions, as shown in (34):

(34) a. i Maria kitakse to Yani
the Maria-nom look-3sg/PS the Yani-acc SVO
'Maria looked at Yani'

b. kitakse i Maria to Yani
look-3sg/PS the Maria-nom the Yani-acc VSO
'Maria looked at Yani'

c. kitakse to Yani i Maria
look-3sg/PS the Yani-acc the Maria-nom VOS
'Maria looked at Yani'

d. to Yani kitakse i Maria
the Yani-acc look-3sg/PS the Maria-nom OVS
'Maria looked at Yani'

e. i Maria to Yani kitakse
the Maria-nom the Yani-acc look-3sg/PS SOV
'Maria looked at Yani'

[24] By combining linguistic elements to form larger units, the syntax creates relations and dependencies between these elements. One such relation, which is often marked via morphology, is 'Agree'. When two elements agree, they share certain features. These can be present on either one of them or both. Such features include features for person, number, gender and case. The overt expression of an Agree relation can for example be an affix on a verb, such as the subject agreement marker in languages like Modern Greek, German etc. In minimalist syntax an agree relation is initiated by a head—'the probe'—that searches in the derivation that has been built up so far (the command domain). When it encounters an element that has the feature specification that the probe is searching for—'the goal'—, an Agree relation is established between the probe and the goal.

f. to Yani i Maria kitakse
the Yani-acc *the Maria- nom* *looked-3sg* OSV
'Maria looked at Yani'

Hence, the core computational system supplies the information structure component with a number of word orders, in line with S-IS mapping as stated in Section 1.2.1. These word orders are in turn, first, the input to the S-P mapping. Therefore the output representations of the overt syntactic component are mapped onto prosodic structure, before they reaches the information component. Stress is assigned in the prosodic structure on the most prominent constituent as determined by discourse requirements (in accordance with the prosody-discourse mapping). In this respect, the prosodic structure is the place of application of prosodic rules, such as, for example, the Nuclear Stress Rule (henceforth NSR). The S-P mapping is the mechanism which ensures the satisfaction of the interpretive focus-marking principle in (33) in Greek.

Now, let us assume that we have a scenario where discourse (i.e. a context question) requires a certain focusing context to be realized. Based on the above description, how then is focus interpretation obtained and how is focus signaled via stress? The short answer is that discourse requires and prosody satisfies the discourse requirements. Anticipating the discussion to follow, I make the following claim: what gives us focus in Greek is a prosodic condition: a result of the application of the S-P mapping.

Let me elucidate. I assume that the output representations of the overt syntactic component are mapped into prosodic structure in the following way: First, I take on that a prosodic phrasing algorithm is effective in Greek: an end-based algorithm, which dictates the mapping of the edges of syntactic constituents with prosodic ones (Selkirk 1986, 1995, 2000., Truckenbrodt 1995, 1999). Hence, the S-P mapping is subject to end-based mapping rules which align the (right) edge of syntactic phrases with the (right) edge of phonological phrases (P-phrase).[25] In particular, I argue that the mapping rules in (35) are operative in Greek on the domain of syntactic and phonological phrases and on the domain of the clause with the intonational phrase (I-phrase):

[25] Prosodic structure groups the linear string into phonological word (w), which themselves form phonological phrases (φ), which in turn from an intonational phrase (I-Phrases), which finally form the utterance (U), according to the end-based mapping (Selkirk 1984, 1995).

(35) S-P mapping of phrases (Greek)

Align the right edge of a syntactic phrase with the right edge of a P-phrase.

Align the right edge of a clause with the right edge of an I-phrase.

I further propose that these S-P mapping rules in (35) are facilitated by two processes: the process of alignment (S-PA) and the process of misalignment (S-PM):

Consider the examples in (36) below for illustration:

(36) a. [$_{F}$ i **MITERA**] (katharise to spiti) **S**VO
the mother-nom clean-3sg/PS the house-acc

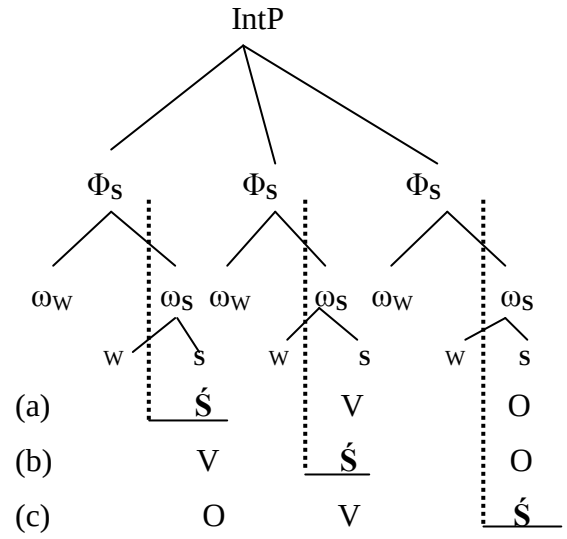
b. (to katharise) [$_{F}$ i **MITERA**] (to spiti) clV**S**O
It-cl clean-3sg/PS the mother-nom the house-acc

c. (to spiti to katharise) [$_{F}$ i **MITERA**] OclV**S**
the house-acc it-cl clean-3sg/PS the mother-nom

When the constituent that needs to be stressed appears in the sentence final position the S-PA mapping operates and aligns the right edge of prosody with the right edge of syntax in accordance with (35), as shown in example (36c), and also represented in the tree diagram in (37c). However, when the constituent that receives the stress is not in the most embedded position but appears in the medial or clause initial position, then a special mapping operates, the S-PM, and ensures that the maping between the syntactic and prosodic structure is altered in such a way, so that the non-final focused constituent in syntax is aligned with the right edge of a phonological phrase, that is, the rightmost most prominent constituent of a phonological phrase, which is not final in the clause but it is final in the prosodic structure, due to the fact that the *in-situ* post-focal material is de-accented (cf. Baltazani 2002). As a result, I argue that the phonological phrase that contains the focused element is *always* the rightmost in the prosodic structure. In other words, in cases where an element other that the most embedded is to be focused, the S-PM ensures that the element in question appears at the relevant edge of the phonological domain to receive main stress. (cf. examples (36a) and (36b) and their representation in (37a) and (37b) respectively)).[26]

[26] In the above tree diagram, I use a metrical tree annotation (cf. Liberman 1979 and Liberman & Prince 1977). Metrical trees are annotated with Strong (S) and Weak (W) labels. By assumption, S is

(37)



Looking at the tree in (37), the question that immediately arises is: Which underlying assumptions lead to the tree structure in (37) and the proposed (mis)-alignment processes? In particular, under which conditions is the focused constituent considered final in the prosodic structure in non-final focus instances? In other words, how can the S-PM ensure that the element in focus appear at the relevant edge to receive main stress? I make the following assumptions with regards to the prosodic encoding of focus in Greek:

First, in Greek, default stress prominence is rightmost within the phonological phrase (P-phrase) and rightmost within the intonational phrase (I-Phrase):

(38) Greek Sentence Stress Rule (GSSR)
Assign stress prominence to the rightmost element of the clause.

The widely accepted constraints in (39) are responsible for the emergence of rightmost sentence stress.

(39) a. RIGHTMOST-φ: The head prosodic word (PW) is rightmost in a P-phrase.
b. RIGHTMOST-IP: The head P-phrase is rightmost in an IP (or I-Phrase).
(based on EDGEMOST, Prince & Smolensky 1993; Prince 1983).

---

assigned on the top node. The main stress falls on the node that is only dominated by S-s, which is indicated in bold in the diagram. I use the same annotation in subsequent tree-diagrams.

For instance, for both the SVO/VSO orders, the rightmost element will be the object:

(40) *Default sentence stress in SVO/VSO orders:*

| | | |

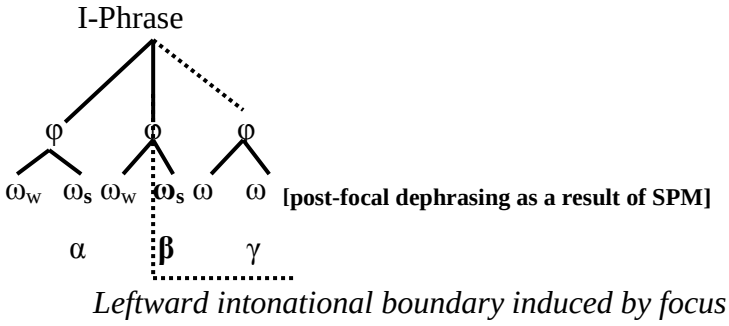


Figure 2: Focus induced prosodic phrasing in Greek

The main contribution of the S-PA and S-PM is that they predict the position of focus prosodically by enabling the assignment of main stress. Quite importantly, the application of the S-PA and the S-PM allows this proposal to account for all the possible focus positions in a uniform fashion: a unification of focus positions across the clausal structure.

Furthermore, it crucially predicts that the outputs of the S-P mapping which feed directly into the discourse component (part of the C-I) underdetermine the position of focus syntactically and interpretationally. From a syntactic point of view, the proposed analysis predicts that the syntactic quality or label of the focus position in prosodic structure is underdetermined: the element that will bear the stress is syntactically underdetermined (it can be a subject, a verb, an object); the same phonological word can be realized by a number of word order constituents, since every terminal node can in principle be occupied by a different constituent (cf. 37). This is the first level of underdeterminacy.

The other level of underdeterminacy is related to prosody: whether focus appears on the left, medial, or right periphery carrying the same interpretation, as shown in (36), is not relevant as regards to the actual position for the realization of focus, namely as far as focus interpretation is concerned, since it will always coincide with the right edge of the P-phrase of the I-phrase that contains it as a result of the S-PM. It thus follows that the S-IS underdeterminacy hypothesis with respect to focus interpretation is a consequence of the fact that focus interpretation runs off prosodic structure; it is the outcome of the S-PM process.

1.5 Structure of the Thesis

The remaining chapters of the thesis are structured in the following way:

Chapter 2 examines the syntactic encoding of focus and proposes that evidence from Greek and other languages suggests an approach where (a) overall, the pragmatic structuring of the utterance should be represented independently of syntax and semantics and (b) more particularly, focus interpretation in Greek cannot be read off directly syntactic structure: the Greek left periphery does not necessarily implicate a specialized, cartographically encoded focus position, in the sense that focus movement is not necessary to achieve focus interpretation, à la Rizzi (1997). In particular, evidence from word order shows that the relation between syntax and information structure is flexible: In particular, I argue that the S-IS mapping underdetermines focus interpretation in Greek in a one-to-many and many-to-one fashion. Moreover, I look in more detail at the internal structure of the left periphery and I show that syntactic properties such as *recursiveness* and *subjacency* are independent of the partition of the sentence into *new-given* information. I also provide evidence questioning the quantificational operator properties of focus showing that Weak Crossover should be rather treated as a discourse phenomenon.

Chapter 3 offers a semantic outlook of focus and argues for a unification approach of focus at the semantic component. I show that semantic focus types such as contrast, information focus and exhaustivity are not syntactically encoded in designated position. I examine the different focus functions and I discuss an alternative semantic account to Kiss's (1998) approach, the Alternative Semantics (Rooth 1985, 1992), which I adopt as the main semantic model in the thesis. I show that in Greek, there is no logical correspondence between focus interpretation and syntactic position present and that focus interpretation is independent of syntax and relies on discourse/pragmatic or contextual factors. Evidence from exhaustivity and contrast is provided. In the end, I examine how the different strategies across languages *–ex-situ* and *in-situ-* are justified in the light of economy considerations given the apparent optionality. I provide a tentative proposal on the issue of optionality based on the notions of costly operations and complexity, showing that languages always ensure economy by allowing some operations to be less-economical than others.

Chapter 4 offers a stress based analysis for the encoding of focus interpretation in Greek. I show that in Greek prosody is the level of interpretation of the utterance in discourse, and I propose that focus interpretation in Greek is associated at the level of prosody and interpreted off output representations of the mapping from prosody to discourse. More specifically, I propose a model of componential mapping between syntax, prosody and discourse which accounts for the licensing of focus interpretation in Greek across all syntactic positions: right peripheral, left peripheral and string-medial. The mechanisms involved in the model allow me to (a) account the direct relation between stress and focus, (b) to predict the focus position in the prosodic structure, (c) to account for a unification of focus positions across a sentence from both a prosodic and an interpretive point of view. It also predicts that the underdeterminacy with respect to focus interpretation in the language is a consequence of the fact that interpretation runs off prosodic structure.

Chapter 5 examines the information structure properties of word order variation in Greek. It proposes a set of structural and phonological information structure constraints against which the S-IS underdeterminacy hypothesis is attested throughout all word order variation. Certain interesting issues arise with respect to the examination of both ground and focus material and the strength/validity of the S-IS underdeterminacy hypothesis: I evaluate the relative prominence of the phonological and syntactic resources in constraining information structure, and I argue for the importance of the prosodic component as a stronger indicator of Information structure partitions. Violations of phonological constraints are more fatal than syntactic in grammaticality outcomes. It is predicted that word order in Greek is a weak factor for the realization of Information structure.

Building on this last observation, coupled with some interesting issues arising from the behaviour of V-initial orders (VSO and VOS), I argue that information packaging in Greek may not refer only to the pragmatic articulation of information flow but rather to more abstract conceptual strategies in the C-I interface along the lines of Gécseg & Kiefer (2009), Kechagias (2011).

Chapter 6 concludes the previous chapters and discusses some empirical and theoretical implications of the current approach on the grammar of focus in Greek and beyond.

CHAPTER 2: THE SYNTACTIC ENCODING OF FOCUS

2.1. Introduction

In this Chapter I examine the theory that focus is a property encoded in the syntax, by means of a designated syntactic position. The idea of encoding focus in the syntax came from observation of languages like Hungarian, Basque, Albanian, among others, where the focused item occupies a fixed, left-peripheral position in the sentence. The proposal is that a dedicated head (Foc°) exists in the left periphery, whose specifier is filled by the focused constituent.

In particular, here I examine the syntactic encoding of focus and I propose that evidence from Greek and other languages suggests an approach where (a) overall, the pragmatic structuring of the utterance should be represented independently of syntax and semantics and (b) more particularly, focus interpretation in Greek cannot be read off directly syntactic structure: the Greek left periphery does not necessarily involve a designated, cartographically encoded focus position, in the sense that focus movement is not necessary to achieve focus interpretation.

To support the above, this Chapter is divided into two parts: In the first part, after I discuss discourse configurationality and main syntactic assumptions on Greek word order (section 2), I outline Rizzi's (1997, 2004) cartographic proposal of the left periphery (section 3). In section 4, I provide evidence showing that the relation between word order and information structure is flexible: I argue that the S-IS mapping underdetermines focus interpretation in Greek in a one-to-many and many-to-one fashion. The main implication here is that the properties of the S-IS mapping appear to be incompatible with a left-peripheral encoding of focus interpretation in Greek.

In the second part, I look in more detail at the internal structure of the left periphery, more specifically the notion of recursion and the operator properties of discourse elements (section 5). In section 6, I critically discuss the above properties: I show that syntactic properties such as recursion and subjacency are independent of the partition of the sentence into new-given information. In particular, in section 2.6.1, I argue that information structure is not organised in a recursive way as syntax is. In section 2.6.2, I discuss the notion of subjacency and I show that subjacency can also be independent of the partition of the sentence into new-given information. In section 2.6.3, I argue that semantic focus in Greek cannot affect the truth conditions associated with the sentence in NS. In section 2.6.4, I argue that ordering restrictions of left peripheral elements can be independent from the articulation of Information structure constraints. In section 2.6.5, I provide evidence questioning the quantificational operator properties of focus showing that Weak Crossover (WCO) should be rather treated as a discourse phenomenon. In section 2.6.6, I show that the cartographic approach is faced with a challenge to explain broad focus structures, as well as cases where the focus does not correspond to a constituent projecting phrase structure. Finally, the syntactic encoding of focus cannot account for the interaction between Information structure and phonology. Section 7 concludes the discussion.

2.2 On Discourse Configurationality

Seeing that generative analysis has been extended to more and more languages within the development of the Government & Binding and Minimalist frameworks (Chomsky 1986 and later), it has become obvious that languages in which topic and focus form key constituents of sentence structure, i.e., languages in which primary sentence articulation serves to express discourse functions, represent a type which is presumably as common as the language type represented by English. These languages have been called discourse configurational. The discourse configurational approaches mainly advocate that communicative notions, such as topics and focus, are syntactically encoded. According to Kiss (1995a), the properties on the basis of which a language is categorized as discourse configurational languages are the following:

A. *The (discourse-) semantic function "topic", serving to foreground a specific individual that something will be predicated about (not necessarily identical with the grammatical subject), is expressed through a particular structural relation (in other words, it is associated with a particular structural position).*
B. *The (discourse-) semantic function of "focus", expressing identification, is realized through a particular structural relation (that is, by movement into a particular structural position).*

Languages can have both properties A and B. É. Kiss (1995a:5) provides a list of languages that have been identified as discourse configurational, some of which are also in Baker's (2003) list of non-configurational languages. These languages come from a range of language families. Probably the best known example of a discourse configurational language is Hungarian, where a focused element must occur in the position immediately preceding the verb. The object in Hungarian typically occurs after the verb, like *kalapot* 'hat' in (1b), but is preposed to precede the verb when a certain interpretation needs to be achieved, i.e. identificational focus (1a).

(1) a. Mari egy [$_{F}$ **KALAPOT**] nézett ki magának
Mary a hat-acc picked out herself-dat
'It was a hat that Mary picked for herself'

b. Mari ki nézett magának egy [$_{F}$ **KALAPOT**]
Mary out picked herself-dat a hat-acc
'Mary picked for herself a hat'

(É.Kiss 1998:247)

In this respect, (1a) in Hungarian shows that a constituent can be interpreted as focus, iff it occupies a position in the left periphery or a preverbal position, or it is contained in a phrase that does so. Hence, Hungarian displays what we call a focus construction; a particular structural relation that is associated with the discourse function of focus and preverbal focus in Hungarian receives an exhaustive or contrastive interpretation (Kiss 1998). Moreover, in Hungarian prosodic prominence is exclusively derived by constituent structure and applies on the initial constituent of the prosodic phrase.

In the same spirit, Rizzi (1997) argues that Italian marks not exhaustivity but rather *contrast*: thus in Italian contrastive foci are marked structurally by moving the focal element to a designated position in the left periphery of the clause (see also Cinque 1999, Poletto 2000, Beninca 2001, Belletti 2004 among others). This movement is either overt as in (2a) or covert as in (2b):

(2) a. [$_{\mathbf{F}}$ il **TUO** libro]$_i$ ho comprato t_i (non il suo). *Italian*
the your book have bought-1sg not the (one) of-him
'I bought your book, not his'

b. ho comprato [$_{\mathbf{F}}$ il **TUO** libro] (non il suo).
(I) have bought-1sg the your book not the (one) of-him
'I bought your book, not his'

It becomes obvious, that in discourse configurational analyses, the correlation between focus and the grammatical representation of the utterance is strictly determined through a direct and unambiguous mapping between the two (cf. Chomsky 1971; Jackendoff 1972; Antinucci and Cinque 1977; Abraham et al. 1986; Horváth 1986; Rochemont 1986; Diesing 1992; Büring 1995; Kiss 1998b; Rizzi 1997; Vallduví & Vilkuna 1998; Zubizaretta 1998). More particularly, in these approaches, the main assumption is that a specific chunk of the clausal structure above the IP or TP levels is designated to host certain elements with specific discourse functions, which are represented by Phrase Structure through distinct functional projections, i.e. FocusP and TopicP. Hence, topics and foci move to peripheral positions where they check their discourse related features to achieve the corresponding interpretations. The discourse configurational approaches of the early 90s opened the path to a more finely articulated approach 'the cartography of the left periphery' (Rizzi 1997) that we will explore in the following sections.

In the same spirit, Greek has also been typically described as a discourse configurational language; it is a relatively free-word order language (as shown in the next section) in which the realization of information structure has been argued to be partly regulated by syntax, i.e. word order. Previous work on Greek has focused on the syntactic manifestations of discourse functions (focus and topic patterns) and shows that preferences in terms of word order are heavily dependent on the articulation of these notions (Phillipaki-Warbuton 1982; Alexiadou 1999; Baltazani

1999, 2002; Tsimpli 1990, 1995, 1997, Tsiplakou 1999 etc). The main debate in these previous accounts revolves around deriving word order variation from information structure.

In what immediately follows, I will look at these previous accounts and the structural assumptions they make on the interaction between word order and information structure. In section 3, I will discuss the 'cartography of the left periphery' (Rizzi 1997).

2.2.1 Structural Assumptions on Greek Word Order

Greek is a null subject language (NSL) with overt morphological case, which, in effect, allows flexibility in the possible word order options (i.e. SVO, VOS, VSO, OVS and sometimes SOV, and OSV). Thus, the proposition 'Maria looked at Yani' exploits the rather liberal distribution of arguments in different positions and can surface in any of the positions shown in (3) below:

(3) a. i Maria kitakse to Yani
the Maria-nom look-3sg/PS the Yani-acc SVO
'Maria looked at Yani'

b. kitakse i Maria to Yani
look-3sg/PS the Maria-nom the Yani-acc VSO
'Maria looked at Yani'

c. kitakse to Yani i Maria
look-3sg/PS the Yani-acc the Maria-nom VOS
'Maria looked at Yani'

d. to Yani kitakse i Maria
the Yani-acc look-3sg/PS the Maria-nom OVS
'Maria looked at Yani'

e. i Maria to Yani kitakse
the Maria-nom the Yani-acc look-3sg/PS SOV
'Maria looked at Yani'

f. ? to Yani i Maria kitakse[28]
the Yani-acc *the Maria- nom* *looked-3sg* OSV
'Maria looked at Yani'

The mainstream view in the Greek literature on discourse functions (e.g., focus, topics, and ground) is that each of the above word order options is generally systematic to a different information structure. Overall, each word order has been claimed to provide a different (usually unique) partitioning of the proposition into new vs. given information (Agouraki 1993; Tsimpli 1990, 1995, 1997; Alexiadou 1999, 2000 a.o), as shown in (4).

(4) a. i Maria [$_{\mathbf{F}}$ kitakse to **YANI**]
the Maria-nom *look-3sg/PS* *the Yani-acc* S**VO**
'Maria looked at Yani'

b. [$_{\mathbf{F}}$ kitakse i Maria to **YANI**]
look-3sg/PS *the Maria-nom* *the Yani-acc* **VSO**
'Maria looked at Yani'

c. kitakse to Yani [$_{\mathbf{F}}$ i **MARIA**]
look-3sg/PS *the Yani-acc* *the Maria-nom* VO**S**
'Maria looked at Yani'

In this sense, SVO has been typically accounted as the order revealing a topic-comment articulation, where the subject is a topic and the verbal phase is the comment. VSO has also been described as the canonical word order in Greek in the sense that it is the only order in which the subject occurs in its thematic position, namely SpecVP. Finally, in VOS the subject is normally focused and the verb phrase dislocated in TP. (Catsimali 1990, Tsimpli (1990), Alexiadou & Anagnostopoulou (1998), Philippaki- Warburton & Spyropoulos (1999) and Philippaki-Warburton (1985. 1987, 2001). Moreover, the SVO, VSO and VOS word orders are claimed to be possible under neutral intonation (stress on the rightmost constituent).[29]

[28] Most native speakers would find this order as highly 'marked'. Although acceptable, it is usually associated with a distinct contrastive or corrective reading on any of the constituents.
[29] In Chapters 4 and 5, I will show that VOS and VSO are not felicitous under rightmost stress.

The OVS, SOV, and OSV word order options in (5a-c) are assumed to be more marked or only acceptable when the object is focused and receives the main stress of the clause, as in (5). This empirical observation is consistent with and established in previous literature on Greek word order (Philippaki-Warbuton 1982, Alexiadou 1999, Alexiadou & Anagnostopoulou 1998, Tsimpli 1990, a.o).[30]

(5) a. [$_F$ to **YANI**] kitakse i Maria
the Yani-acc look-3sg/PS the Maria-nom **O**VS
'Maria looked at Yani'

b. i Maria [$_F$ to **YANI**] kitakse
the Maria-nom the Yani-acc look-3sg/PS S**O**V
'Maria looked at Yani'

c. **[$_F$** to **YANI**] i Maria kitakse
the Yani-acc the Maria-nom look-3sg/PS **O**SV
'Maria looked at Yani'

Moreover, it is generally assumed that verb-final orders, such as (5b-c) are not felicitous especially under rightmost stress.[31] Hence, it seems that overall the preference of one word order over another in Greek (along with grammaticatility

[30] I do not agree with the above view. These orders may be more marked but it is not the case that they are only felicitous when the object is in focus. Consider, for instance, the OVS order below, in which any constituent in principle can receive stress and be the focus of the sentence, contrary to what has been claimed in literature (to be discussed in section 2.4.1, example 29). All orders are grammatical and felicitous in different focus contexts.

(i) a. **[$_F$ KINITO]** alakse i Eleni **O**VS
mobile-acc change-3sg-PS the Eleni-nom
'Eleni changed **mobile phone**'

b. kinito **[$_F$ ALAKSE]** i Eleni O**V**S
mobile-acc change-3sg-PS the Eleni-nom
'Eleni **changed** mobile phone'

c. kinito alakse [$_F$ i **ELENI]** OV**S**
mobile-acc change-3sg-PS the Eleni-nom
'**Eleni** changed mobile phone'

Morevover, these orders can realize more information structure partition when the object is clitic left-dislocated.

[31] In Chapter 5, I will show that their grammatically improves when more material is added as we will see. OVS can also be felicitous with rightmost stress on the subject; is not as marked as it has been claimed and becomes even more felicitous in the presence of an object resumptive pronoun. I will show OVS is grammatical under many different focus contexts, e.g. Verb and Subject focus. The issue of V-final orders poses a problem for the theory of stress assignment to be addressed in Chapter 5. V-final orders are not generally felicitous with main stress in final position and the reason for that is an issue that remains unresolved. However, their acceptability improves if the verb is contrastively focused or if a resumptive pronoun is present (cf. Chapter 5: 5.5).

judgements) is assumed to be heavily dependent on the pragmatic structuring of information, in accordance with the our discussion in section 2.2. Each one of the word orders has been claimed to serve some specific information structure partition (Agouraki 1990, 1993, Alexiadou 1999, Tsimpli 1990, 1997 among others). Despite the widespread use of sentences with non-canonical constituent ordering, sentences that deviate from the canonical word order such as SOV, OVS and OSV are felt by native speakers to be marked (according to assumptions of previous literature)The issue of the main word order in Greek has been a matter of great controversy, where the main debate revolves around deriving word order from information structure patterns (Philippaki-Warburton 1985; Catsimali 1990; Tsimpli 1990; Tsimpli 1995; Horrocks 1994; Alexiadou 1994; Alexiadou 1999; Alexiadou 2000). Nevertheless, despite the scrutiny, the VSO order as in (4b) is seen as the most neutral, and in actual fact is considered to be the base order.[32]/[33]

There are theoretical and empirical reasons for assuming that VSO is the basic word order in Greek. Firstly, a canonical word order is compatible with many focus structures, including broad sentence focus, i.e. allows focus projection under neutral intonation.[34] Focus projection possibilities entail compatibility with a variety of contexts and, crucially, with the so-called out-of- the-blue context, that is, the context with the minimal set of assumptions shared among the interlocutors. Therefore, a word order such as VSO in Greek is considered canonical because of its suitability with a wider range of contexts.

[32]A neutral order is the order that is usually required to be acceptable in a "neutral context". A neutral context is one where none of the constituents is emphasized or highlighted more than the others. It can often be solicited by questions such as ‘What's new?’ or ‘What is going on?’ The neutral order is also assumed to be the least complex in terms of its syntactic derivation, in the sense that the arguments of the verb (at least the direct complement) remain within its domain (VP-internally).

[33] For the most part, the literature on Greek assumes that VSO is the base order in Greek (Alexiadou 1999; Catsimali 1990; Horrocks 1994; Philippaki-Warbuton 1982; Tsimpli 1995, 1996; Tsiplakou 1998; Tzanidaki 1994).

[34] Selkirk develops an explicit account of how focus marking propagates up to syntactic trees. Accenting indicates focus marking. Focus marking projects up a given syntactic tree such that both lexical items, i.e. terminal nodes and phrasal levels, i.e. nonterminal nodes, can be F-marked. Specifically, a set of rules determines how and where F-marking occurs in the syntax. These rules are shown in (i) and (ii):

(i) Basic Rule: An accented word is f-marked.

(iii) Focus Projection:

a. F-marking the head of a phrase licenses F-marking of the phrase.

b. F-marking of the internal argument of a head licenses the F-marking of the head.

c. F-marking of the antecedent of a trace left by NP or wh-movement licenses F-marking of the trace.

Let us consider now some of the more empirical arguments in support of the VSO as a basic word order in Greek. First, Philippaki- Warbuton (1985) observes that there is a group of subordinate adjunct clauses in which SVO is impossible:[35]

(6) a. svisame ta fota ja na filisi o Janis ti Maria **VSO**
switch off-1pl/PS the lights-acc for to kiss-3sg the John-nom the Mary-acc
'We switched off the lights so that John would kiss Mary'.
b. * [ja na o Janis na filisi ti Maria] *SVO

Furthermore, Philippaki- Warbuton (1985) points out that VSO sentences are the most natural answer to the question '*What happened*?' which indicates an all-focus context:

(7) a. Ti eyine?
'What happened?'
b . [filise o Yanis ti **MARIA**] $_{NEW}$
kiss-3sg/PS the John-nom the Mary-acc
'John kissed Mary'

Philippaki-Warbuton (1985) accounts for the above examples by assuming that the information they convey is all new and therefore they should be considered as pragmatically neutral. No topic or theme is present in the above sentences. Thus, the sentence in (7b) should account for the neutral word order in Greek.

Supplementary evidence comes from the fact that VSO appears to be the only unambiguous order in the absence of morphological indications. In the following examples in (8) the two NPs are morphologically ambiguous in terms of case; they can be marked as nominative or accusative case. Given that stress is rightmost in Greek (to be discussed in Chapter 4), example (8a) can only have the VSO reading by default. On the contrary, the example in (8b) is ambiguous between an SVO and OVS reading. The last example in (8c) has only one reading, the SVO. One can argue that if this example were to have an OVS reading, then the object should be co-indexed with a clitic pronoun. Thus, the VSO order is considered to be unambiguous, unlike any NP-V-NP orders which cannot be unambiguous.

[35] The unavailability of this word order is due to the *na* particle which is the marker indicative of the subjunctive in Greek, which cannot be separated from the verb. As a result (6b) is totally unacceptable.

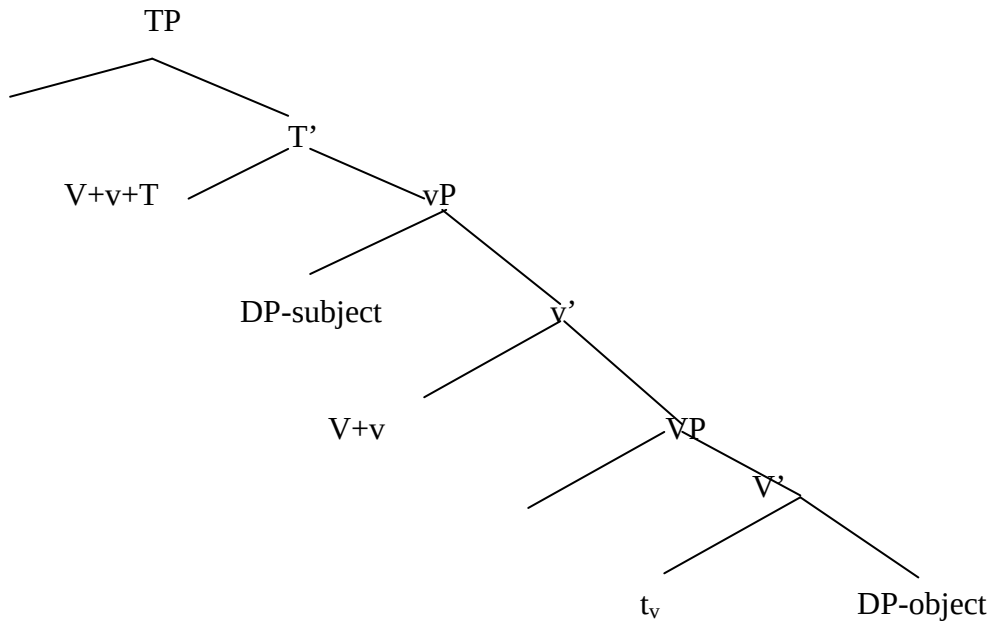
(8) a. kitakse to agori [$_F$ to **KORITSI**] VS**O**
look-3sg/PS the boy-nom the girl-acc
'The boy looked at the **girl**'

b. [$_F$ to **AGORI**] kitakse to koritsi **S**VO/**O**VS
the boy-nom look-3sg/PS the girl-acc
'The **boy** looked at the girl/ 'The girl looked at the **boy**'

c. to agori kitakse [$_F$ to **KORITSI**] SV**O/?O**VS
the boy-nom look-3sg/PS the girl-acc
'The boy looked at the **girl**'

An additional similarity that syntactic approaches to word order share with respect to syntactic derivation, is that there is overt V-to-T movement: the finite verb leaves its base position in the overt syntax so that the T [-interpretable] features of the verbal head are checked against T. Based on the VP-internal Subject Hypothesis (Koopman & Sportiche 1991), VSO can be derived in the following way: the verb moves to a higher functional head (most probably T, under V-to-T movement), while both the subject and the object remain in their thematic positions. The syntactic representation of a VSO is thus as follows:

(9)



The reasons that allow the subject to remain *in-situ* in Greek VSO is justified in the Minimalist Program under Agree, which allows for a relation to be established between the un-interpretable phi-features of T and the interpretable phi-features of the subject in its thematic position. The subject also bears an un-interpretable Case feature that marks it as a Goal for the Probe T (Chomsky 2001, 2004). Alexiadou & Anagnostopoulou (2001) argue that in Greek VSO both the subject and the object remain *in-situ*, i.e., VP internally. They argue that the agreement affix on the verb acts as a clitic and that clitics in Greek are the spell-out of formal features. In this respect V-to-T suffices to check the Case feature of the subject as well. Consequently, DP-movement is not necessary.

Roussou & Tsimpli (2006) provide a novel account for VSO in Greek. They argue that the licensing of VSO is a function of the nominal (clitic) positions available in the clause structure and the inflectional properties of the DP. They assume that the clause divides into three basic domains (V, T and C), and that nominal (clitic) positions (clitic projections) are available in each of these domains which, they argue, can be lexicalized not only by clitics but also by nominal DPs. The subject and the object DP can appear in the same domain V, since they spell out different features depending on their grammatical function. This is illustrated in the following example.[36]

(10) [$_{T}$ Estile [$_{CL1}$ o Petros [$_{CL2}$ to gramma [$_{V}$ t_{v}]]]]
send-3sg/PS the Peter the letter
'Peter sent the letter'

Coming now to the SVO order, most accounts support the view that preverbal subject in SVO carry the properties of topic phrases, where the subject occupies a peripheral position, rendering SVO order marked with respect to its information structure properties (Philippaki-Warburton 1985; Catsimali 1990; Kotzoglou 2001; Tsimpli 1990; Tsimpli 1995; Horrocks 1994; Alexiadou 1994; Alexiadou 1999; Alexiadou 1999, 2000, Alexiadou & Anagnostopoulou 1998). In fact, these analyses entail that movement of the preverbal subject from its original merger position to some topic projection generated in the left periphery of the clausal structure is induced for the

[36] They argue that any other derivation, e.g. Verb in C, Subject in the T domain leaving the object in the V domain would be marked and thus motivated for independent (focusing, emphatic) reasons.

satisfaction of a periphery feature, namely a Topic feature. The TopicP occupies an A-bar position picturing the SVO order as marked in terms of its information structure (e.g. Philippaki-Warburton 1985; Catsimali 1990; Tsimpli 1990; Tsimpli 1995; Horrocks 1994; Alexiadou 1994, 1999; Alexiadou & Anagnostopoulou 1998, 2001).

The treatment of preverbal subjects in Greek as topics goes back to Philippaki-Warbuton (1985), where it is argued that preverbal subjects in Greek, a null-subject language (NSL) are syntactically distinct from preverbal subjects in non-NSLs. Also in Tsimpli (1995) the subject in SVO occupies a topic position adjoined to TNSP. The subject of VOS also occupies the same position, the difference being the directionality of the adjunction. She claims that the overt subject is not the grammatical subject of the sentence but rather a topic. The grammatical subject in these orders is a *pro* element which is schematically presented in (11):

(11) a. NP_i [....pro...]
b. [.... $pro_{i\ ....}$] NP_i
(Philippaki-Warbuton 1985; Tsimpli 1995: 178)

Alexiadou (1994, 1996) and Alexiadou & Anagnostopoulou (1995, 1998) present arguments for a left dislocation analysis of the preverbal subject (in the spirit Cinque 1990). The preverbal subject patterns like a dislocated element: it is found in a base generated position and does not involve NP-movement to SpecTP. They also assume that the preverbal subject is located in the specifier of a TopicP, where it is directly merged and SpecTP is not present (12).

(12) $[_{TopicP}$ **S** $[_{TP}$ VO]

Alexiadou & Anagnostopoulou's (1997, 1998) argument of the left dislocated properties of preverbal subjects in Greek is based on the distributional and interpretational properties of preverbal quantifiers and indefinite subjects as well as wh-phrases and preverbal subjects. The following example in (13) provides evidence that the subject is not located in the specifier of TP and the verb is not in T. This is because a number of adverbs can intervene between the subject and the verb. Thus, in their account preverbal subjects behave similarly to CLLDed elements:

(13) o Arthuros htes meta apo poles prospathies sinandise to Merlin
The-Arther-nom yesterday after from many efforts-acc met the-Merlin-acc
'Arthur finally met Merlin'
(example from Alexiadou 1999:47)

Additional arguments involve satisfying the EPP either by the agreement affix or by a null clitic (Spyropoulos & Philippaki-Warbuton 2001) in the T projection leaving the subject in the thematic position either realized or unrealized as a postverbal DP. In any case, the preverbal subject has to be a topic occupying an A′ position in the left periphery (contra Horrocks 1994).

However, recent work has revealed that preverbal subjects may exhibit properties which are inherently incompatible with left dislocated elements. Roussou & Tsimpli (2006:340-41) provide evidence from generic, middle, and stative constructions shown in (14), in which preverbal subjects are only available with a generic reading under neutral intonation.

(14) a. i fitites pigenun (# i fitites) se diadilosis GENERIC
the students-nom go-3sg (the students-nom) to demonstration-acc.pl
'Students go to demonstrations.'
b. ta lina plenonde (#ta lina) efkola MIDDLE
the linen-nom wash-pass.3pl (the linen-nom) easily
'Linen washes easily.'

Roussou & Tsimpli (2006: 340-1) claim that the interpretation of certain preverbal subjects is incompatible with a topic reading. This is due to the interpretative properties of these constructions that obligatorily associate the subject with the T domain. This is more prominent in constructions where the preverbal subject has a generic reading. This reading in Greek subjects is closely associated with the tense/aspect specification of [-past, -perfective] of the predicate. Roussou & Tsimpli (2006) argue that this association discloses a checking relation established between the preverbal subject and the T head, which cannot be between the T head and a left dislocated element.

Moreover, Revithiadou & Spyropoulos (2009) provide evidence that preverbal subjects are often liable both to phonological rephrasing (15) and to extraction from

within the cycle (16).[37] The example in (16) shows that in Greek preverbal subjects are not islands; Greek syntax violates the 'Subject Condition' by permitting extraction out of a subject even when this is preverbal. This leads them to conclude that preverbal subjects are not necessarily left dislocated as clitic-left dislocated elements are.

(15) to fos dini isxi sti mixani
the light-nom give-3sg power-acc to-the machine-ACC
'The light gives power to the engine.'
a. [to fos]φ [dinØ isçi]φ [sti mixani]φ or
b. [to fos dini]φ [isçi sti mixani]φ

(16) [pjanu maθiti]$_i$ mu ipes [$_{CP}$ oti [$_{DP\text{-}subj\ i}$ mitera t_i]
which student-gen I-gen say-2sg.PS that the mother-nom
paraponeθike sto diefθindi]]?
complain-3sg.PS to-the headmaster-acc
*'Of which student did you tell me that the mother complained to the headmaster?'

As far as VOS is concerned, the situation is more complicated: in principle there are two ways of deriving the order, that is, either by object movement (scrambling) or by moving the verb and the object together as a unit. There is also an alternative way: right adjunction of the subject in VP (or a higher functional head, cf. Philippaki 1985, Tsimpli 1995). The movement of the verb with the object as a single unit stranding the subject behind is reminiscent of the Kaynian remnant style of movement (cf. Sifaki 2003, Alexiadou & Anagnostopoulou 1998; Spyropoulos & Philippaki-Warbuton 2001, Georgiafentis 2003, Kechagias 2008). Roussou and Tsimpli (2006) examine different ways for deriving the VOS order which involve the presence of the subject and the object in different domains, mapping to different interpretations. This is shown in (17):

[37] As evident from clitic left-dislocated objects left-dislocated elements do not allow extraction from within, as a result of their status as derivational islands (Uriagereka 1999, Nunes & Uriagereka 2000).

(17) a. [$_{C}$ egrapse [$_{CL1}$ [$_{CL2}$ to gramma [$_{T}$ t_v [$_{CL1}$ o Petros [$_{CL2}$ [$_{v}$ t_v]]]]]]]
Wrote-3sg the letter-acc the Peter-nom
c. [$_{T}$ egrapse [$_{CL1}$ [$_{CL2}$ to gramma [$_{V}$ t_v [$_{XP}$ o Petros]]]]
'Peter wrote the letter'
(Example from Roussou & Tsimpli 2006: 346)[38]

In the first derivation, in (17a), VOS can involve the verb in C (focused), the object in the T domain and the subject in the V domain. In this derivation none of the arguments is marked as focus or topic. An alternative derivation is the one shown in (17b) where the verb is in T, the object is the V and the subject right dislocated. In this derivation, the subject is interpreted as topic and an intonational break is assumed between the subject and the object. Roussou & Tsimpli (2006) argue that this intonational break becomes more prominent when other material intervenes between the object and the subject as in (18) (cf. Philippaki-Warburton 2001):

(18) Egrapse to grama [$_{F}$ **PROSEXTIKA**] o Petros.
write-3sg/PS the letter-acc carefully the Peter-nom
'Peter wrote the letter carefully. '

Their claim that the subject can appear in a right-dislocated position with a topic interpretation is further supported empirically by the fact that a response to a narrow-focus question involving the object can include the subject in clause-final position, as is shown in their example in (19).

(19) A: Ti aghorase o Janis?
What-acc buy-3sg/PS the John-nom
'What did John buy? '
B: Aghorase [$_{F}$ **IPOLOJISTI**] o Janis.
buy-3sg/PS computer-acc the John-acc
'John bought a computer. '

[38] As it appeas from the example in (17) CL phrases are clitic projections. They are repeated twice, above vP and TP in accordance with Roussou & Tsimpli's (2006) account, where, as mentioned earlier, they assume that the clause divides into three basic domains (V, T and C), and that nominal (clitic) positions Clitic projections (CL) are available in each of these domains which, they argue, can be lexicalized not only by clitics but also by nominal DPs.

(example from Roussou & Tsimpli 2006: 347)

Given that the postverbal subject is old information in (19A), as it is part of the wh-question, the only new information is the object. Based on the above, (Roussou & Tsimpli 2006) suggest that not all VOS orders have the same derivation. In fact, they are different structures where stress falls in different places. Thus, VOS appears to be ambiguous between distinct structures, depending on whether the subject is right-dislocated or not. In these cases the stress pattern also needs to change accordingly, if the subject is right-dislocated then the object receives the main stress. In fact, right dislocation can be a consequence of the fact that stress is assigned on the object (see also Chapters 3, 4 and 5).[39]

To conclude, the above described discourse configurational aspects of Greek, evident from the interaction between word order and information structure in the language, have been accommodated in a strictly configurational model of grammar, such as the current generative grammar, through formal ways. In Chapter 1:1.3, I highlighted positive and more debatable aspects of the Chomskian model (Chomsky 1995, 1999, 2001, 2005, 2006). There I also emphasized the importance of the cartographic analyses of the left periphery of the clause (Rizzi 1997, 2004; Cinque 1999 for adverbs). In what follows, I would like to concentrate a bit more on the most characteristic advocate of the cartographic trend, Rizzi's (1997, 2004) *Fine Structure of the Left Periphery*.

2.3 The Cartography of the Left Periphery

According to the central theories of generative grammar, the architecture of the clause is divided into three structural layers: the lexical layer, the inflectional layer and the complementizer layer. Three main analyses of particular influence in the current syntactic theory have accounted for a layered clausal architecture. First, Kayne (1984) proposed the 'Split-VP' hypothesis which suggests an extended VP into multiple VP

[39] Technically, I do not fully agree with Roussou & Tsimpli's (2006) approach in terms of an analsis of VOS where the object is right-dislocated. As it will be discussed in Chapter 4, prosodic reasons prevent a right-dislocation analysis. The subject cannot form an independent intonational unit (a P-phrase or I-Phrase) of its own but it is rather de-accented post-focally. I agree though that VOS can give multiple Information structure readings depending on stress assignment. As mentioned in Chapter 1: 1.3, and here in section 2.1, all these analyses that assume a cartographic approach where elements receive the right interpretation due to the fact that they are found in the 'right postion' where the receive interpretation by SM and C-I is what the thesis argues against.

layers for the accommodation of multiple verbal arguments. Later on, Pollock (1989) Chomsky (1988), Ouhalla (1988) argued for a 'Split-IP' into several highly specified heads for Agreement, Tense, Aspect and Mood. Around the same time or slightly later, it became generally assumed that a separate functional head, namely the Focus head, is projected in the left periphery of the clause. This proposal accounted for the evidence found in many languages (Bródy 1995 on Hungarian; Laka 1990 on Basque; Ouhalla 1994 on Standard Arabic; É.Kiss 1995 Rebuschi & Tuller 1999; Tsimpli 1995 on Greek, Choe 1995 on Korean; Uriagereka 1995 on Western Romance; Ambar 1999 on Portuguese among others).

In addition, linguists have noted that given information precedes new information (Prince 1981) and different constructions in languages work together towards achieving this result.[40] The question that arose was how such an ordering of discourse information could be accounted for. If, for instance, topics are found dislocated in the left periphery, how is this movement motivated? Are the topics in the left periphery adjoined or are they to be found in dedicated specifier positions?

Rizzi (1997) argued for the latter view and provided a mapping between the various positions on the left periphery and the topic and focus functions in Italian. Topics and focused constituents move to the specifier of the Topic phrase (TopicP) and the Focus phrase (FocusP) respectively. Focus movement to the enriched left periphery is motivated by the Focus Criterion which like all criteria requires a given structural configuration stating that movement is 'last resort' option and that it only occurs to satisfy LF requirements of the moved element.[41] Rizzi assumes that the focused element must enter into a spec-head relationship with the FP head before Spell-Out. Rizzi's proposal of the Focus Criterion is parallel to the Wh-Criterion proposed earlier to account for wh-phrases (Rizzi 1990).

(20) **Focus Criterion**

a. A focused phrase must be in a spec-head configuration with an $X^{\circ}_{[+Focus]}$.

b. An $X^{\circ}_{[+Focus]}$ must be in a spec-head configuration with a focused phrase.

[40]Movement motivated by discourse functions had been discussed in the generative grammar framework by Jackendoff 1972, Chomsky 1977, Culicover and Rochemont 1983.

[41] For different versions of the Focus Criterion see Agouraki (1993) Brody (1990) and Rizzi (1995).

In Brody's (1995) outline the [+F] feature must be assigned to the focused phrase by the verb. Rizzi's proposal is compatible with more recent Minimalist assumptions and as a result the formal [+F] feature is an inherent property of the focused item, and it must be checked by movement to a head endowed with the same feature.

The *Split-CP* hypothesis, the hypothesis that the left periphery should be enriched with several functional projections intended for specific functional heads, became the dominant view due to three widely accepted theoretical advances of that time:

a. There is no optionality in grammar; hence elements move only when they are 'required to' (Chomsky 1995).
b. Movement must be triggered by a feature on a functional head. (cf. also Chomsky 2000).
c. Features of the 'peripheral system' (force, topic, focus, etc.) trigger A´-movement.

(a) basically necessitates that ostensibly optional variants have different underlying structures. Since, for all we know, few if any structural variants have the same information structure properties, it seemed reasonable to locate their structural differences in projections representing properties of information structure. Such an idea was reinforced by the adoption of (b) and (c). Rizzi's Split- CP has been the main force in implementing the idea that the elements above IP (the left periphery) encode indeed semantic and pragmatic properties of the sentence:

> Syntactic movement … must be triggered by the satisfaction of certain quasi morphological requirements of heads. … [S]uch features have an interpretive import (Wh, Neg, Top, Foc,…): they determine the interpretation of the category bearing them and of its immediate constituents …, function as scope markers for phrases with the relevant quantificational force in a local configuration, etc.… (Rizzi 1997:282).

According to this proposal, four kinds of elements typically occur in the semantic relevant projections: interrogative pronouns, relative pronouns, topics and focused

elements. The highest projection Force Phrase, encodes the illocutionary force of the sentence and the Fin Phrase, specifies whether the IP below it is finite or non-finite.[42] As (21) predicts, topics can occur before and after the focus in Italian. In contrast, only one focus can be found in this structure. No strict order is actually expected between foci and topics since both topic projections are optional. Foci therefore can either precede or follow topics and can also occur in the centre.

(21) Split-CP: [ForceP [TopP* [FocP [TopP* [FinP [IP….

The following example illustrates Rizzi's Split-CP assuming a C head, on the very left edge of the CP, expressing the illocutionary force of the clause, Force, and an I head at the bottom, Fin, articulating the content of IP embedded under it, that is, whether it is a subjunctive, an indicative or an infinitive.

(22) a. Credo che a Gianni, **QUESTO**, domani, gli dovrete dire

C TopP FocP TopP IP

b. Credo che, domani, **QUESTO**, a Gianni, gli dovrete dire

C TopP FocP TopP IP

c. Credo che domani, a Gianni, **QUESTO**, gli dovrete dire

C TopP TopP FocP IP

d. Credo che a Gianni, domani, **QUESTO**, gli dovrete dire

C TopP Top P FocP IP

e. Credo che **QUESTO**, a Gianni, domani, gli dovrete dire

C FocP TopP TopP IP

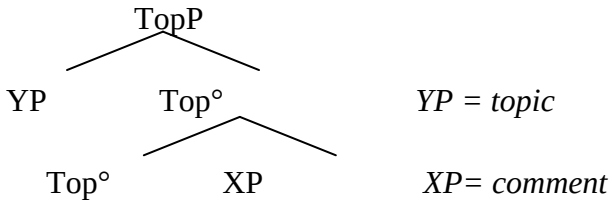
f. Credo che **QUESTO**, domani, a Gianni, gli dovrete dire

C FocP TopP TopP IP

[42] As noted earlier, Rizzi's proposal involves minimalist assumptions in which movement to a specifier position is triggered by the satisfaction of the feature requirements of the head and the moved element; a requirement of interpretive nature.

Looking in more into the internal structure of the left periphery, Rizzi assumes a semantic notion of his projections: the information structure is directly encoded in the LF representation, that is, the specifier of a TopP is the topic and its complement is the comment.

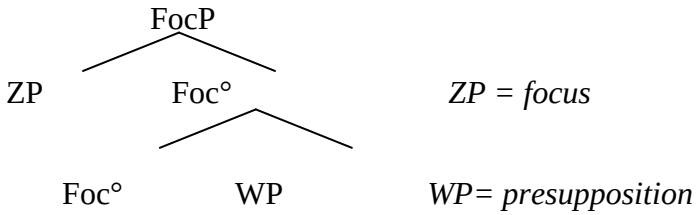
(23)



(Rizzi1997: ex.21)

In structural terms, the Topic phrase in (23) and the Focus Phrase in (24) are the same. Where they differ is their interpretation. The FocP splits the clause into the focus-presupposition partition. The specifier (ZP) is the focal element, the complement of Foc° (WP) is the presupposition, or in other words the given information.

(24)



To conclude, since Rizzi (1997), the cartography of the C domain, has become the topic of much discussion. It seems fair to say that most of the work in the general enterprise of the Minimalist Program (Chomsky 1995 and later) has accepted the idea of multiple projections on the left periphery. Indeed, the current trend seems to be proposing more projections than those initially posited by Rizzi or providing an even finer structure of the left periphery (cf. Benincà & Poletto 2004).

A cartographic outlook of the Greek left periphery has been strongly supported in works, such as Tsimpli (1997), Roussou (2000), Baltazani (1999, 2002) among others. However, while most cartographic analyses, which identify the relation between word order and information structure relying on the idea of formal features and a functional hierarchy of discourse projections have a good degree of descriptive efficiency, they are typically deprived of any explanatory power, when it comes to a language like

Greek where, as we will see next, word order -as a structural means of realizing information structure - is strikingly flexible. The set of empirical data that follows pinpoints this issue. In this respect, in the subsequent section, I would like to put forward a working hypothesis that Greek clashes with a cartographic outlook of encoding focus interpretation, not necessarily supporting a focus enriched split-CP. Rather, the evidence from the S-IS mapping suggests that the encoding of focus interpretation most likely supports a 'focus-less' left periphery.

2.4 Towards a 'focus-less' Greek Left Periphery

In this section, I discuss the word order facts presented in section 2.2 in light of the main trends of the cartography of the left periphery, which as shown in the previous section (2.3) advocates a strict/rigid model of encoding discourse functions, in the sense that the S-IS mapping is direct and unambiguous: it assumes a one-to-one correspondence between syntactic position and interpretive effect and as a result adopts a radically decompositional approach, in the sense that, if there are two interpretive effects, there must be two designated positions in which these are licensed.

In contrast, here I will show that the relation between syntax (in terms of word order) and information structure in Greek is strikingly flexible, namely, that the encoding of focus interpretation does not need to be accommodated via a one-to-one correspondence between word order and information structure. In other words, focus interpretation in Greek is not necessarily encoded in a unique position in the left periphery, but there is a rather considerable amount of optional variants that can facilitate a certain interpretation. More technically, I argue that the S-IS mapping underdetermines focus interpretation in Greek in the sense that a certain interpretive effect can be realized by a number of positions (or word orders).

The empirical evidence supporting the above view is presented next in section 2.4.1. These empirical facts have important theoretical consequences for the encoding of focus in Greek but also for the grammar of focus itself. As it will be discussed in section 2.4.2, if a certain interpretation can be licensed via multiple orders, then the question is: does Greek need a designated position in the left periphery to license focus interpretation, if the *in-situ* option is equally acceptable? Moreover, how can

such a flexible account of encoding focus be accommodated in a strict model of grammar (such as Minimalism) that ensures economy by minimizing unnecessary operations and disallows optionality.

2.4.1 From Syntax to Information structure: A flexible mapping

With respect to all the assumptions presented in Section 2.2.1 regarding the VSO word order, there is no disagreement that VSO is by default the main word order under syntactic analyses. However, this is not just due to the canonical ordering of constituents, or the association of VSO with all-focus contexts. As a matter of fact, the above properties are not unique to VSO. SVO also constitutes a canonical constituent ordering and can also be associated with an all-focus context. Consider the following example in (25) which replies to an 'any news' question, as in (25a). The information of (25b) is all new:

(25) a. Ta emathes tha nea?
Did you hear the news?
b. [$_{\mathbf{F}}$ i Vasso agorase **SPITI**] **SVO**
the Vasso-nom buy-3sg/PS spiti-ACC
'Vasso bought a house'

If VSO was uniquely identified by all-focus contexts then we should expect to appear uniformly in all-focus contexts. Actually, as a native speaker of Greek I would not prefer to answer question (25a) with a VSO structure. This means that SVO is also part of a number of other structures that can answer an all-focus context. Similarly, VOS can also be an acceptable answer in such a context.[43] Consider the following set of data:

(26) A: What happened in 1453?
B1: [$_{\mathbf{F}}$ i Turki katelavan tin **CONSTANTINUPOLI**] **SVO**
The Turks-nom conquered-3pl the Constantinople-acc
'The Turks occupied Constantinople'

[43] A very detailed exploration of the discourse properties and Information structure partitions of all word orders under a variety of contexts is provided in Chapter 5.

B2: [$_{F}$ katelavan i Turki tin **CONSTANTINUPOLI**] **VSO**
conquered-3pl the Turks-nom the Constantinople-acc

B3: [katelavan tin Constantinupoli i **TURKI**] **VOS**
conquered-3pl the Constantinople-acc the Turks-nom

The data above are problematic for analyses that build on the idea that a certain language, configures its word order in order for a certain pragmatic function or category to be licensed: In (26) the same interpretive effect, that is, broad focus, is licensed by three distinct word orders, namely, SVO, VSO and VOS, since all three orders can be used in answering all-new information seeking questions.

Moreover, Philippaki-Warbuton's (1985) argument that VSO is the only unambiguous order with respect to the positioning of the arguments is not valid. In (27) we cannot tell that VSO is unambiguous if both arguments are neuter and in the same number. Example (27) can be ambiguous between a VOS (27b) and a VSO (27d) reading and only with the assistance of stress we can actually resolve the ambiguity. As it will be argued in Chapter 4, stress assignment provides a cue for anchoring the utterance within its context and resolving ambiguities.

(27) a. Pjos kitakse to agori?
Who looked at the boy?

b. kitakse to agori [$_{F}$ to **KORITSI**] VO**S**
look-3sg/PS the boy-nom the girl-acc
'The boy looked at the girl'

c. Pjon kitakse to agori?
Who did the girl look at?

d. kitakse to agori [$_{F}$ to **KORITSI**] VS**O**
look-3sg/PS the boy-nom the girl-acc
'The boy looked at the girl'

In the pair (27a-b) the context-question asks for the subject and it is satisfied in (27b) where the subject *koritsi* carries the main stress and appears to be the focused constituent of the sentence. Thus, stress on *koritsi* provides the cue that *koritsi* is the subject not the object since it answers the question in (25a) rendering a VOS word order. In the pair (27c-d) the context question asks for the object (the subject being

agori here). The focused element to *koritsi* in (27d) carries the stress and since it answers successfully the question in (27c) it results in a VSO word order.[44]

On a second note, all syntactic analyses on VSO assume that in terms of derivation both arguments of the verb remain VP-internally. This syntactic assumption has by implication further consequences for the S-IS mapping, i.e., lack of movement is reminiscent of neutral contexts or non-informationally marked contexts. However, any constituent of VSO can in principle receive stress and be interpreted as focus regardless of position or derivation, as shown in (28). The discourse properties assigned to syntactic objects are not determined by means of the position they receive in the clause structure as a result of movement or non-movement, but are rather determined by discourse requirements which can be satisfied in situ via the assignment of main stress.

(28) a. [$_{F}$ **KÍTAKSE**] i Maria to Yani **V**SO
looked-3sg/PS the Maria-nom the Yani-acc
'Maria **looked** at Yani'

b. kitakse [$_{F}$ i **MARÍA**] to Yani V**S**O
look-3sg/PS the Maria-nom the Yani-acc
'**Maria** looked at Yani'

c. kitakse i Maria [$_{F}$ to **YÁNI**][45] VS**O**
looked-3sg/PS the Maria-nom the Yani-acc
'Maria looked at **Yani**'

On a different note, the same interaction between syntax and prosody can be in principle consistent with any word order. That is, an identical syntactic structure can be realized under different stress patterns (left-peripheral, clause-medial and clause-final) and this ultimately results in different information structure partitions (cf. also Chapter 4: 4.5.3.1). This is also true for the more marked orders which have been claimed in the literature to be mostly acceptable in object focus contexts (discussed in section 2.2.1). Consider, for instance, the OVS order below, in which any constituent

[44] Note that usually structures like (25d) are more natural when the subject is omitted rendering VO instead of VSO.

[45] Potentially any constituent of the VSO structure can receive the main stress. However, I do not consider the structure in (28c) as acceptable with focus on the object, although the main stress falls by default on the most embedded constituent the object. I will discuss this case again later in (36).

in principle can receive stress and be the focus of the sentence, contrary to what has previously been claimed in literature. All the options below are grammatical and felicitous in different focus contexts.

(29) a. [$_F$ **KINITO**] alakse i Eleni **O**VS
mobile-acc change-3sg-PS the Eleni-nom
'Eleni changed **mobile phone**'

b. kinito [$_F$ **ALAKSE**] i Eleni O**V**S
mobile-acc change-3sg-PS the Eleni-nom
'Eleni **changed** mobile phone'

c. kinito alakse [$_F$ i **ELENI**] OV**S**
mobile-acc change-3sg-PS the Eleni-nom
'**Eleni** changed mobile phone'

Moreover, Roussou & Tsimpli's (2006) account has great advantages as opposed to cartographic approaches because (i) it dispenses with discourse functional projections and (ii) is novel in that the licensing of VSO is a function of the nominal (clitic) positions available in the clause structure and the inflectional properties of the DPs, thus, providing a clear-cut syntactic analysis independent of focus reasons. However, when it comes to the S-IS mapping, they assume that the discourse properties of syntactic objects are licensed or interpreted directly in different syntactic domains (V, T and C) through different derivations that accommodate these properties.

In addition, they assume that preverbal focus is uniquely associated with an exhaustive reading. However, recall the data from Chapter 1, repeated here in (30) where the focused constituent receives the same interpretation whether *in-situ* or dislocated, in line with the S-IS underdeterminacy hypothesis to focus interpretation.

(30) What did the neighbours cut?

a. [$_F$ ta **DENDRA**] ekopsan i geitones **O**VS
the trees-acc cut-3pl/PS the neighbours-nom
'The neighbours cut the trees'

b. i geitones ekopsan [$_F$ ta **DENDRA**] SV**O**
the neighbours-nom cut-3pl/PS the trees-acc
'The neighbours cut the trees'

In this respect, the interpretational difference between (30a) and (30b) has to be reflected through different derivations in which in the first instance the focused element is in the C domain and in the second in the V or T predicting different mapping to interpretations.[46/47] The question is: why should we assume two distinct derivations for preverbal and postverbal focus which would eventually end up misinterpreting the data as carrying two distinct interpretations in a decompositional fashion? Both preverbal and postverbal focus structures in (30) are acceptable with either new-information or contrastive/exhaustive focus interpretations depending on the context question. For instance, a context question inducing a contrastive subject focus reading for (30a) could be '*Did the neighbours cut the* WEEDS*?-No, the neighbours cut the* TREES'. Hence, these examples provide evidence that the contrastive or exhaustive interpretation is not exclusively associated with the *ex-situ* or displaced/moved option in (30a). In other words, the contrastive interpretation is not a necessary and sufficient condition of the contextual licensing of focus movement to the preverbal position (see discussion in Chapter 3). There is actually no structural - at least - limitations to the position that a focus-reading is realized within a clause.

With respect to the debate on SVO, namely, whether the subject is a left-dislocated element and interpreted as topic (Alexiadou & Anagnostopoulou 1998) or whether it is licensed by properties of the T domain (Roussou & Tsimpli 2006) and is therefore interpreted simply as subject, it is not relevant for information structure.[48] Evidence from preverbal subjects in SVO orders support the view that information

[46] I agree with Roussou & Tsimpli (2006) that the ordering and interpretation of syntactic objects can be affected by the properties (e.g. features/ thematic/aspectual properties) of the head of the domain that licenses the lexicalization of these objects. For example, the licensing of the subject in the VP domain is compatible with specific interpretations, e.g. bare subjects receive existential interpretation within the VP (cf. also Diesing 1992). Aspectual restrictions on word order may prohibit the licensing of a syntactic object in preverbal or postverbal positions. However, the discourse interpretations, such as focus, that these syntactic objects may receive are not part of this Syntax-LF mapping which regulates ordering restrictions or semantic interpretations, e.g. existential/generic. Discourse functions are part of the IS of the language. Thus, we need to determine: either a different way on how the discourse properties of syntactic objects are assigned their interpretation by the Information structure or to find a convincing way to show how restrictions of the syntax-semantics mapping discussed above can 'feed' into the Information structure. The present thesis adopts the first option in trying to respect the 'autonomy' of the different components of the grammar.

[47] Or even found in the C domain initially, followed by remnant movement of the remaining background material in a topic position, preceding focus.

[48] In Chapter 5, I will use the term 'subject' and 'topic' under the Principle of Detopicalization (Lambrecht 2000), which satisfies conceptual or logico-semantic requirements. However, these terms refer to 'notional' entities, in the sense that anything can be interpreted as a notional subject or notional topic, not just a syntactic subject.

structure requirements are independent from structural interpretational requirement. Consider the following example from Roussou & Tsimpli (2006:341). They show that preverbal subjects impose restrictions in that they disallow determineless DPs. In other words bare nominals are not available (31a). However, when the preverbal subject is focused the determineless DP is allowed (31b).[49]

(31) a. *(Merikes/I) kopeles sinandisan ton Petro
Some/the girls-nom meet-3pl/PS the Peter-acc
'(Some/The) girls met Peter'

b. [$_F$ **KOPELES**] sinandisan ton Petro
girls-nom meet-3pl/PS the Peter-acc
'Girls met Peter'

In addition, consider the following example of an SVO order which shows that an SVO order is not just structurally specialized for the articulation of single a topic-comment reading only; the position of the subject is not uniquely identified as a topic:

(32) a. i mitera katharise to spiti **SVO**
the mother-now clean-3sg/PS the house-acc
'The mother cleaned the house'

b. Pjos katharise to spiti?
Who cleaned the house?
[$_F$ i **MITERA**] (katharise to spiti)

c. I mitera kimithike i katharise to spiti?
Did the mother sleep or cleaned the house?
i mitera [$_F$ **KATHARISE**] to spiti

d. Ti katharise i mitera?
What did the mother clean?
(i mitera katharise) [$_F$ to **SPITI**]

[49] Roussou & Tsimpli (2006) explain that the grammaticality of (21b) is due to the properties of the C domain - where the subject moves – which does not have active case and phi-features. If the subject is not interpreted as topic in their account it is not clear under which property it appears in the C domain.

e. Ti ekane i mitera?
What did the mother do?
(i mitera) [$_{F}$ katharise to **SPITI**]

f. Ksero ti magirepse i mitera, alla ti KATHARISE?
I know what the mother cooked. But what did she clean?
(i mitera katharise) [$_{F}$ to **SPITI**]

g. Mirizei freskada!
It smells fresh!
[$_{F}$ i mitera katharise to **SPITI**]

A particular SVO structure 'the mother cleaned the house' in (32a) - given the different stress assignments in (32b-g) – can give rise to different information structure partitions. One syntactic structure can realized many interpretations, given the different stress assignments which are enforced by different discourse requirements. It follows that in (31) the S-IS mapping underdetermines focus interpretation in a one-to-many fashion.

Similarly to SVO, the literature on VOS discussed in 2.2.1 assumed different derivations which map into different interpretations. However, it is only a stipulation to argue that the subject in examples like (33) is a right-dislocated topic.

(33) Egrapse to grama [$_{F}$ **PROSEXTIKA**] o Petros.
write-3sg/PS the letter-acc carefully the Peter-nom
'Peter wrote the letter carefully. '

Native speakers may perceive an intonational break between the focused adverb and the subject. However, we need more syntactic evidence to support such a claim. We need to examine the syntactic status of the post-focal material subject to a number of syntactic tests and examine whether this is a common pattern behaving consistently in all post-focal material in non-final focus instances (cf. Samek-Lodovici 2005, 2006, 2009 for an analysis of Italian non-final focus structures).

Moreover, unless we have more clear evidence from prosodic phrasing and intonational phonology we cannot stipulate an intonational break before the subject and in turn attribute to it its syntactic characterization as a disclocated element. As

will be shown in Chapter 4, evidence from intonational phonology (Baltazani 2002, Revithiadou 2004) shows that the prosody operates in such a way that any material that is spelled-out after focus is intonationally de-accented and dephrased. This means that the post-focal material remains within the intonational phrase including focus and cannot form a separate phrase. This is an effect induced by the assignment of stress on non-final focus instances. The post-focal material remains de-accented and prosodically unparsed due to the fact that it forms a headless P-phrase (see Chapter 4: 4.5.3.2). In this sense, I beliece it is hard to assume a right dislocation analysis of post-focal material based on prosodic evidence, as this would require assuming that the dislocated phrase forms a separate IP and this cannot be supported at least prosodically.

One welcoming fact of the syntactic assumptions presented in Section 2.2.1 is that we can derive SVO, VSO and VOS in the syntax independently of focusing reason.[50] Some of the properties of these word orders (e.g. the liberal distribution of arguments) derive directly from the pro-drop parameter (Rizzi 1982: availability of null subjects, *that-trace* effects, the presence of post-verbal subjects). On the contrary, the OVS, SOV and OSV orders are more marked –although the pro-drop holds throughout-, in that their derivation can be shown to facilitate specific interpretational requirements.

Let us now consider the following interesting cases on the encoding of pragmatic interpretation:

(34) A: Ask Eleni to join us to the trip

a. B: *ehi [**TOP** AFTI] polles doulies auto to mina VSO
has-3s she-nom many responsibilities-acc this the month
'She has many responsibilities this month'

b. B: [**TOP** AFTI] ehi polles doulies auto to mina SVO
she-nom has-3sg many responsibilities-acc this the month

As regards to the encoding of a discourse interpretation, if for example, a constituent A, the subject 'afti' in particular, interpreted as a topic, or whatever pragmatic category, needs to be merged to a distinct position in the derivation, the question that naturally

[50] However, this does not mean that we cannot assume a focus-internal or topic-internal derivation for these structures.

arises is the following: Why should a topic interpretation be licensed through a distinct word order? VSO above in (34a) is an unnatural option when the subject functions as a topic, whereas SVO in (34b) is unproblematic. One following a formal view could assume that this is so either because a topic-feature in CP-domain remains unchecked if the subject remains in situ within the vP domain or because the topic element does not reach the 'right' position in the left-periphery along the lines of Chomsky. Nonetheless, a closer examination of the data reveals that there is actually nothing 'inherent' to a certain position of the clause, undermining this view. Consider for instance the examples below:

(35) A: I can't give you my coat. Why don't you ask Eleni?
B1: [**TOP** AFTI] den to dini to palto tis me tipota!
she-nom not it-cl give-3sg the coat-acc hers with nothing!
'She wouldn't give her coat, no matter what…'
B2: to palto tis den to dini [**TOP** AFTI] me tipota!
the coat-acc hers not it-cl give-3sg she-nom with nothing!

(36) A: This government is something else…
B1: [**TOP** TIS SINDAKSIS MAS] tis miosan [**F** 2 **FORES**] fetos
the pensions-acc ours them-cl cut-3pl 2 times this year
'They cut our pensions twice this year'
B2: [**F** 2 **FORES**] tis miosan [**TOP** TIS SINDAKSIS MAS] fetos
2 times them-cl cut-3pl the pensions-acc ours this year

In (35) and (36) above a topic category (the pronoun *she* and the DP *our pensions*) may appear either preverbally or postverbally without causing any particular problem, an indication that there is actually no structural - at least - limitations to the position that a topic-reading is realized within a clause. Apparently, these generalisations hold for all focus as well, as already shown in (26), (28), (30) and (32).

In (37) a canonical VSO order is perceived as rather infelicitous when the subject functions as ground and the object as a contrastive/corrective focus:[51]

[51]The same infelicity is attested with VSO when the object is not contrastively focused rather just information focus (see discussion Chapter 5: 5.7).

(37) A: Nikos bought a MOTORBIKE…
B: apokliete …*agorase [**TOP** o NIKOS] [**F AUTOKINITO**] *VS**O**
no way bought-3sg the Nikos-nom car-acc
'No way! Nikos bought a car'

Nonetheless, this cannot be due to some structural limitation regarding the position where such discourse functions are licensed, since Greek is a language that without doubt allows for both given information subjects and contrastively focused objects to occur either preverbally or postverbally:

(38) A: It was a MOTORBIKE that Nikos bought… **O**VS
B: apokliete … [**F AUTOKINITO**] agorase o Nikos
no way car-acc bought-3sg the Nikos-nom
'No way! Nikos bought a **car**'

(39) A: It was a MOTORBIKE that Nikos bought… SV**O**
B: apokliete … o Nikos agorase [**F AUTOKINITO**]
no way the Nikos-nom bought-3sg car-acc
'No way! Nikos bought a **car**'

In the same spirit, a VOS order is also perceived as an unnatural option when the object is interpreted as ground and the subject as contrastive focus/corrective focus:

(40) A: Only Nikos bought a motorbike…
B: kanis lathos; *agorasan [**TOP** MIHANI] [**F OLI**] *VO**S**
You are wrong; bought-3pl motorbike-acc all-nom
'You are wrong; they **all** bought a motorbike'

Yet again, this cannot be due to some cartographic ban, since Greek without doubt allows for contrastively focused subjects and ground information to appear preverbally and as well as postverbally:

(41) A: Only Nikos bought a motorbike…
B: kanis lathos; [$_{\mathbf{TOP}}$ MIHANI] agorasan [$_{\mathbf{F}}$ **OLI**] OV**S**
You are wrong; motorbike-acc bought-3pl all-nom
'You are wrong; they **all** bought a motorbike'

(42) A: Only Nikos bought a motorbike…
B: kanis lathos; [$_{\mathbf{F}}$ **OLI**] agorasan [$_{\mathbf{TOP}}$ MIHANI] **S**VO
You are wrong; all-nom bought-3pl motorbike-acc
'You are wrong; they **all** bought a motorbike'

From the above discussion, it seems that there is actually no structural - at least - limitations to the position that a topic-reading or a focus-reading is realized within a clause All the above observations lead to a number of crucial points with respect to the nature of the S-IS mapping in Greek and the way it facilitates the encoding of focus interpretation in the language. In the next section, I discuss these points.

2.4.2 Discussion: Encoding focus without left peripheral syntax?

The evidence presented in the previous section suggests that a strict cartographic analysis of encoding focus interpretation in Greek might not be the right choice. Here, I would like to discuss some important issues that emerge from the data patterns presented in 2.4.1:

(I). What the evidence in section 2.4.1 shows, is that, in contrast to the cartographic encoding of discourse functions in the left periphery - information packaging or the licensing of discourse functions in Greek is quite flexible: (a) a certain order can be subject to a number of interpretations and is not just pre-configured for the expression of a unique information structure partition (cf. example (32)) and also as evident in examples (26), (28), (30), (35), (36) a given pragmatic effect/partitioning can be achieved via multiple distinct word orders. In the above examples, there is nothing 'inherent' to a certain position in the left periphery that uniquely encodes a certain interpretation or that prevents a certain interpretation from being encoded. In this respect, I argue that the mapping from syntax to information structure in Greek with

respect to the encoding of focus is not cartographic; rather this mapping underdetermines focus interpretation in two ways: one-to-many and many-to-one (also argued in Chapter 1:1.2). I summarize this under the S-IS underdeterminacy hypothesis repeated below in (43):

(43) **S-IS Underdeterminacy Hypothesis**

i. The same word order can be subject to different focus interpretations.

ii. A certain focus interpretation can be licensed via multiple word orders.

In Chapter 4, I argue that the S-IS underdeterminacy with respect to focus interpretation in Greek is a consequence of the way focus is actually encoded in the language; it is the result of the fact that focus interpretation runs off prosodic structure.[52]

(II) Given that the above observations are correct and focus interpretation is underdetermined in Greek (to be fully explored in Chapter 5 amid word order variation), then it may well be the case that there is no predetermined specific position in the left periphery that can exclusively license focus interpretation, despite the fact that V-initial orders seem to be unnatural options when both the subject and the object perform such discourse functions ((37) and (40)). If a given pragmatic effect/partition can be achieved via multiple multiple orders, then why does Greek need a designated focus construction in the left periphery to license focus interpretation, given also that the *in-situ* option is equally acceptable?

A number of analyses have been proposed that dispense with cartographically encoded focus structures in the left periphery (Gil & Tsoulas 2004, Newmeyer 2003, Szendröi 2001, Samek-Lodovici 2005, 2006, 2009).[53] An interesting analysis by

[52] The S-IS underdeterminacy Hypothesis makes some important predictions as noted in Chapter 1: It predicts that word order in Greek is not the most crucial factor for the realization of Information structure (given the flexibility); the S-IS mapping is not direct. The interaction between the structural resources and the phonological resources in realizing Information structure ranks prosody a much more decisive factor in the realization of focus (Chapter 5). A further, more important, prediction resulting from the previous one is that: if the S-IS Mapping is indeed inconsistent and underdetermines focus interpretation in an indirect fashion (one-to-many/many-to-one), and as a result word order in Greek is not directly regulated by Information structure, then the questions that arises is what regulates word order in Greek? It may well be the case that word order in Greek is regulated by other principles, perhaps extralinguistic, conceptual or logico-semantic strategies (Chapter 5).

[53] Apart from the focus projection, the nature of the focus feature has also been a matter of controversy in the literature on Information structure. The focus feature is the link that allows PF and LF to communicate. If the focus feature cannot be sustained, then the motivation for movement loses empirical ground, as well as the host of the movement, i.e. the focus projection. Several scholars

Samek-Lodovici (2006, 2009) shows that Italian contrastive (as well as presentational focus), including its clause-initial and clause-internal instances, always occurs rightmost in a sentence modulo right dislocation. Samek-Lodovici (2006, 2009) adopts a clause-external analysis of right-dislocation which maintains that dislocated items first move leftwards to the specifier of a topic projection TopicP but are eventually stranded in rightmost position by leftward raising of the remnant IP. For example, the derivation of (44) below proceeds in steps as in (45a-b).

(44) L'ho **VISTO**, Gianni
(I) him have seen, John
'I SAW John' / 'I DID see John'

(45) a. [$_{TopP}$ Gianni$_i$ ø$_{Top}$ [$_{IP}$ l'ho **VISTO** t$_i$]]
b. [$_{XP}$ [$_{IP}$ l'ho **VISTO** t$_i$]$_k$ ø$_X$ [$_{TopP}$ Gianni$_i$ ø$_{Top}$ t$_k$]]
(Samek-Lodovici (2006):4, ex.3 & 4))

Hence, according to this analysis, Italian focus is always final in the clause, due to requirements of prosody, and what gives you the impression that focus has been preposed is on that the rest of the constituents appear in right-dislocated position. The analysis of post-focus constituents as right dislocated is shown to be incompatible with a left-peripheral analysis of Italian focus à la Rizzi strongly, supporting a focus-less split-CP. This analysis favours the prosodic accounts proposed in Zubizarreta (1998), Szendröi (2001). These accounts share Zubizarreta's original insight that

Zubizarreta 1998, Szendröi 2001, Brunetti 2004, Reinhart 2006, among others have pointed the problematic status of a focus feature in terms of violating the *Inclusiveness Condition* (Chomsky 1995) - which states that 'no interface condition can be states on either PF or the LF interface that makes direct reference to information that is only available on the other interface' -, agreeing that it is neither obvious how focus can be a property of a lexical item, nor clear how it could drive the syntactic computation within Chomsky's feature-checking mechanism. Zubizarreta (1998) proposes a weakened formulation of Inclusiveness, allowing for a focus feature to play a role in the syntactic computation. On the contrary, building on Reinhart (1995), Szendröi (2001, 2002) dispenses with the existence of a focus feature in syntax arguing that focus is encoded in prosody by means of main prominence. The correspondence between stress and focus is made possible by a direct link between LF and PF. In such a view, focus does not play any role in syntax: focus movement cannot be feature driven, nor are there distinct positions of topic and focus. Rejecting the T-model of grammar, she proposes architecture – couched within the Optimal Theoretical framework – in which LF and PF communicate directly. The Inclusiveness Condition principle is maintained at the expense of giving out the T-model of grammar.

focus occurs rightmost in order to match the position of main stress and acquire the necessary prosodic prominence.[54]

In a similar manner, in Chapter 4, I argue for a prosodic-discourse encoding of focus in Greek. Due to prosodic requirements stress is assigned by default on the rightmost constituent. Based on that, I offer a uniform analysis of focus encoding, arguing that focus (clause-initial, clause-internal and right peripheral) via stress always occurs *rightmost* on the intonational phrase that contains it by means of a misaligned S-P mapping, the implication being that post-focal material is discourse-linked and de-accented. In other words, what looks like displacement effects in syntax is actually the effect of misalignment which aligns the non-final focused constituent in syntax with the rightmost most prominent prosodic constituent of the phonological phrase that contains it in the prosodic structure, which is not the final one.[55] The assignment of main stress in the rightmost position renders any post-focal material de-accented and subsequently de-phrased (Chapter 4: 4.5.3).

As argued in Chapter 1 (section 1.3), given that the interpretive focus rules (Reinhart's 1995 focus interpretation principle) do not directly refer to syntactic structure but to prosodic structure and more specifically the mapping between prosody and discourse, the analysis offered here differs from previous analyses in that it offers a mechanism of identifying focus at the phonological component ,via the position of stress, rather than proposing a process of focus structures being amended in the syntax (like p-movement, cf. Zubizaretta 1998, Szendröi 2001, 2003).[56]

The main implication behind the analysis offered in this thesis (developed in Chapter 4) is that a left-peripheral analysis à la Rizzi (1997) cannot straightforwardly account for the properties (prosodic or syntactic) of post-focal material in non-final focus structures. This study favours a prosodically-driven analysis that can apply to all instances of focus (final and non-final), on the assumption that stress is independently prevented from falling on post-focal material due to their discourse-

[54] For a right-dislocation analysis, see also Vallduví (1992), Cecchetto (1999), Cardinaletti (2001; 2002), Alexopoulou & Kolliakou (2001) a.o.

[55] This does not mean that there are no displacement effects in syntax. Displacement effects are evident in syntax. Following Neeleman & van de Koot (2008), I argue in Chapter 3:3.7 that the movement of focus is optional because it does not serve the focus per se, but it facilitates a transparent mapping between syntactic constituents and constituents of the Information structure. This is an effect of the misalignment which renders post-focal material de-accented and prosodically de-phrased, by enabling the assignment of main stress as far rightmost as possible in prosody. In this respect, focus looks like occuring always rightmost (in prosodic structure), modulo post-focal de-accenting.

[56] I will look at these analyses in more detail in Chapter 4.

given and de-accented status (Selkirk 1984, Gussenhoven 1984, Baltazani 2002). In order to provide a unified analysis of all possible focus positions (or underdeterminate positions) across the sentence, we may have to abandon the idea of a fixed focus projection and accept that the position of focus is vigorously determined by the application of rightmost stress assignment, which focus must match to achieve prosodic prominence; a stress-focus correspondence (in the main spirit of Reinhart 1995, Zubizarreta 1998, Szendröi 2001, Samek-Lodovici 2005, 2006, 2009). Since focus is signalled prosodically, the position of focus will follow the position of stress, which always occurs rightmost (by means of a special S-P mapping), due to prosodic requirements/conditions (i.e., prosodic status of post-focal material). Subsequently, the operation of de-accenting/de-phrasing of post-focal material predicts how far focus occurs from the right edge of the clause (cf. Chapter 4).

(III) The last point involves issues of economy and optionality.

Following on from the above discussion, the trigger of the word order rearrangements in the syntax (such as the ones in (38-39) and (41-42)), is another compelling aspect for syntactic theories dealing with information structure. The notion of economy underpinning the Minimalist Program (Chapter 1:1.3) implies that movement cannot apply freely. On current standard assumptions EM cannot have a structural or morphological trigger (cf. Chapter 1:1.3). The only remaining possibility is that it is licensed by having an effect at one of the Interfaces, presumably the one between the syntax and the C-I (or the information component if we assume the existence of an independent module responsible for discourse functions). But if a given language configures its syntax (i.e. word order) in a particular way in order for a certain interpretive effect to be licensed, say, for instance, {B,A}, then, what we would normally expect is that this is because the order {A,B} could not express the same information. However, this is not at the case in Greek. In the light of the empirical evidence presented in this section, it has become obvious that discourse functions such as topic, focus are licensed both *in-situ* and *ex-situ* thus yielding a variety of word orders. The question is: if Greek has focus in situ, and if there is no predetermined focus position in the left-periphery to license specific interpretations, then why focus dislocation still occurs (especially when it expresses the same information)? Is it optional? If yes, then why?

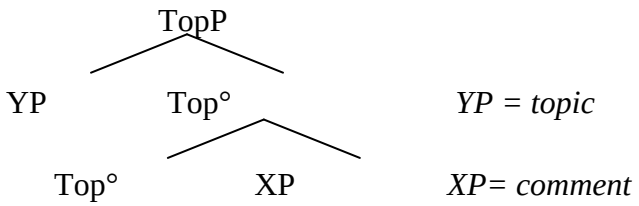
In other words, if a language has more than one focusing strategy (morphosyntactic and/or phonological), like Greek, can each of these be established to correspond to a distinct interpretive goal, - hence providing support for the notion of language as an economy-driven system (Minimalism - Chomsky 1995 and later) -, or are interpretive 'choices' enforced by pragmatic/discourse factors?

Anticipating the discussion to follow, in Chapter 3, I address this poiint. There, I provide evidence supporting the second clause of the S-IS underderterminacy hypothesis (cf. 43) arguing that there is one to one relation between semantic interpretation and syntactic position (contra Kiss 1998, Rizzi 1997); rather semantic focus interpretations are contextually determined. In essence, I provide a unified analysis of focus positions across the sentence from an interpretive point of view. With respect to economy and optionality, I argue - following Neeleman & van de Koot (1998) - that movement of focus is optional because it does not serve the focus per se, but it facilitates a transparent mapping between syntactic constituents and constituents of the information structure. In other words, movement facilitates the creation of an information structure template of the [Focus]-[Background] kind (i.e. focus takes the background as a complement at the level of information structure).

2.5 The Internal Structure of the Left Periphery: Recursion

Recall from section 2.3 that Rizzi assigns an internal structure to his projections which are interpreted in the semantic component: information structure is directly encoded in the LF representation, that is, the specifier of a TopP is the topic and its complement is the comment.

(46)

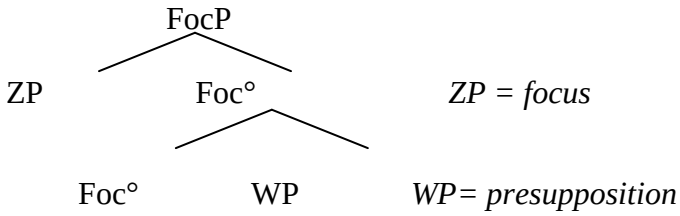


(Rizzi1997: ex.21)

In structural terms, the Topic phrase in (46) and the Focus Phrase in (47) are the same. Where they differ is their interpretation. The FocP splits the clause into the focus-

presupposition partition. The specifier (ZP) is the focal element, the complement of Foc° (WP) is the presupposition, or in other words the given information.

(47)



Rizzi argues that topic is recursive and focus is not: in the case of focus an interpretive oxymoron arises because old information has to become new. This interpretive clash bans the recursion of focus. If the complement of focus carries the presupposition, then it follows that it cannot carry new information at the same time; it is impossible for the sentence to contain a second focused constituent.[57] Hence, Rizzi rules out recursive foci in (47) by virtue of their presuppositional complement (Rizzi 1997:14-15). Look at the following example for illustration: [58]

(48) a. * [$_{F}$ **A GIANNI, IL LIBRO**], domani glielo doro senz' altro
'The book, to John, tomorrow, I'll give it to him for sure'

b. il libro, a Gianni, domani glielo doro senz' altro
'The book, to John, tomorrow, I'll give it to him for sure'

The situation is different with topics, as exemplified in (46). The TP instantiates a topic-comment sequence. The comment can convey both given/ground and new/focus information; the comment may contain another topic. This means that the topic phrase is open to free recursion. As Rizzi argues, a comment may be articulated further in another topic-comment structure; new information can become old and get topicalized again (cf. example 48b).[59]

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[57] Cf. Neeleman & Van de Koot (2008) who provide a much more compelling account of the movement of discourse functions which circumvents the interpretive oxymoron raised by Rizzi's account.

[58] Interestingly, Brunetti (2003) discusses the same example and argues that its ungrammaticality is questionable. The context in which it occurs is rare. She assumes that the example could be grammatical if we analyze the two focused constituents as a single focus.

[59] As it becomes obvious, Rizzi's explanation goes back to Jackendoff's (1972) idea that the focus of an utterance partitions the utterance in the focal part and the presupposition.

The discussion on recursion relates to one of the properties that Rizzi (1997) specifies for foci as opposed to topics, namely, that there here is no restriction on the number of topics that can appear in a clause, while each clause allows only one focus. He discusses another three properties that differentiate topics and foci which relate to the quantificational character of focus, as an operator involving quantificational A-bar binding of a variable. In what follows, we will look at these properties.

2.5.1 Operator vs. non-operator properties of the Left Periphery

The existence of preposed focused constructions in the left periphery is considered by Rizzi as evidence in favour of the presence of Operator movement to the focus projection, leading to the assumption that focus is quantificational. Rizzi (1997) argues that the quantificational character of focus is verified from three properties related of foci as opposed to topics, which I discuss below.

From what was discussed so far, it is clear that focus movement, targeting the C system in Rizzi's analysis, is taken to be an A-bar movement. The following examples (from Brunetti 2003:45) show that focus movement in Italian, like wh-movement, is subject to island effects, evident in A-bar dependencies:

(49) Subject

* [$_{F}$ **DI TOMMASO**] mi hanno invitato i genitori$_{t}$

of Tommaso to-me-CL have invited the parents

(50) Adjunct

* [$_{F}$ **I PANTALONI MIMETICI**] mi sono arrabbiata perché hai comprato$_{t}$

the camouflaged pants REFL have got angry because (you) have bought

(51) Complex-NP

*[$_{F}$ **LA TUA PROF. DEL LICEO**] ricordo la volta che abbiamo incontrato$_{t}$

the your teacher of the high school (I) remember the time that (we) have met

Rizzi (1997) follows Lasnik & Stowell (1991) in arguing that Focus movement involves quantificational A-bar movement, distinguishing it from non-quantificational or referential movement. The former involves an LF-representation resulting in a

configuration where a quantifier binds a variable (52a), whereas the latter involves binding of a null constant by a null operator (52b).

(52) a.* Who$_i$ does his$_i$ mother really like t$_i$? (=vbl)
b. John, who$_i$ his$_i$ mother really likes t$_i$ (=nc)
(Rizzi 1997: example 26)

The above classification explains why focus being a quantificational element, binding a variable, gives rise to WCO effects (cf. 53b). Actually, the WCO argument has been considered major evidence in arguing for the quantificational (A-bar binding) properties of focus. WCO is a phenomenon that involves semantic variable chains. WCO blocks co-reference between a pronoun and its antecedent, if the antecedent is a quantified expression which binds a trace/variable and the trace/variable of the antecedent follows the pronoun. Rizzi shows that, while topics are not subject to WCO, foci are (cf. 53b). Topics (53a) are not quantificational, therefore, do not form semantic variable chains and obviate from WCO effects.

(53) a. Gianni, sua$_i$ madre lo$_i$ ha sempre apprezzato
'Gianni, his mother always appreciated him'
b. [$_F$ **GIANNI**] $_i$, sua $*_i/_j$ madre ha sempre apprezzato t (non Piero)
'GIANNI, his mother always appreciated, not Piero'
(Rizzi 1995:ex.17-18)

The above explanation also clarifies why clitics/resumptive pronouns are prohibited with focus constructions but are permitted with topics, the second property that follows from Rizzi's classification. The presence of an overt clitic in the topic constructions disallows the formation of a quantificational chain on the assumption that quantificational chains bind variables (traces). In contrast, overt pronominal clitics are different from traces in that, unlike traces, clitics do not license the presence of a variable in the LF representation. In other words, foci do not allow for resumptive clitics since a clitic does not qualify as a variable and if foci are quantificational, they must bind a variable. However, topics require a resumptive clitic, since without it, the object trace would not be licensed, since it cannot be a variable, nor can it be any

other type of empty category (cf.54b).[60] The resumptive clitic in Italian is the null-constant bound by the Topic.[61]

(54) a. Il tuo libro, lo ho comprato.
the your book it-CL (I) have bought
'Your book, I bought it'

b. * Il tuo libro, ho comprato t .
the your book (I) have bought

c. *[$_{F}$ IL **TUO** libro] lo ho comprato (non il suo)
the your book it-CL (I) have bought not the (one) of-him/her

d. [$_{F}$ IL **TUO** libro] ho comprato t (non il suo).
the your book (I) have bought not the (one) of-him/her
'I bought your book, not his'

(Rizzi 1995:ex. 16a)

Despite the presence of WCO effects and the unavailability of resumptive clitics the quantificational nature of focus is also evidenced by a third property; the fact that in Italian bare quantificational elements can be focused, although they cannot be topicalized, as the following examples in (55) from Rizzi (1997) show:

(55) a. *Nessuno, lo ho visto
nobody him-cl (I) have seen
'I have seen nobody'

b. [$_{F}$ **NESSUNO**], ho visto t
nobody (I) have seen
'I have seen nobody'

[60] As far as Topicalization is concerned he argues that A-bar movement is *anaphoric* (or referential in Lasnik and Stowell's terms) because it does not exhibit WCO effects. Thus, in his analysis the Top° instantiates an *anaphoric operator/constant*, which instead for assigning a value to its bindee, it rather identifies an antecedent to which it connects its bindee. The case of Topicalization in English though carries an empty *anaphoric* operator (i). The null/empty constant that the Topic binds in represented by a resumptive pronoun in Italian:
(i) Your book, [OP [I bought t (Rizzi 1997:ex.29)

[61] This is also the analysis that Tsimpli (1995) has based on Greek.

Hence, as shown above, three independent generalizations, the WCO effects, the unavailability of clitics in focus structures, and the focalization of bare quantifiers obtain a uniform explanation, under one hypothesis, namely, that focus is quantificational.

Finally, another property comes from Rizzi's observation that the Focus Phrase in Italian can host a number of elements. It is evident that foci are incompatible with wh-elements (57), whereas topics are not (56):

(56) a. A Gianni, che cosa gli hai detto?
"To Gianni, what did you tell him?"
b. *Che cosa, a Gianni, gli hai detto?
"What, to Gianni, did you tell him?"

(57) a. *[$_{F}$ **A GIANNI**], che cosa hai detto (, non a Piero)?
"TO GIANNI, what did you tell him (, non a Piero)?"
b. *Che cosa, [$_{F}$ **A GIANNI**], hai detto (, non a Piero)?
"What, TO GIANNI, did you tell him (, non a Piero)?"

(Rizzi 1997 ex: 24, 25)

With respect to the incompatibility of focus with wh-questions, Rizzi argues that this is because the wh-phrase moves and occupies the SpecFP in matrix questions. This is because both wh-phrases and foci compete for the same specifier position since they are both specified for the features [+Wh] and [+F]. Moreover, the wh- phrase cannot tolerate a subject or a topic preverbally, whereas a focus can. The reason being that the wh-phrase is generated under I^{o}; thus, I^{o}-to-C^{o} movement must apply. The focus instead is moved under Foc° and therefore a subject or a topic can intervene between the focus and the verb. In contrast, in indirect clauses, foci can co-occur with the wh-phrases. Hence, Rizzi assumes that the Foc head is a syncretic position, hosting both wh-phrases and focused elementsm as shown in the following example:

(58) ? Mi domando [$_{F}$ a **GIANNI**] che cosa abbiano detto, (non a Piero)
'I wonder to GIANNI what they said, (not to Piero)'.

(from Rizzi 1995:fn 18)

Since the operator properties of focus and its availability to occupy a left peripheral position are strictly related, some authors have claimed that a focus *in-situ* must be a

different grammatical object. This is for instance what É. Kiss (1998) says, as we will see in detail in the next Chapter (section 3.2). Rizzi, however, takes the opposite point of view: he argues that the low Focus moves to the same left peripheral position as the high focus at LF.[62] Assuming Chomsky's (1976) observations about WCO, he accounts for it by saying that the focused item undergoes LF movement to the left. Hence, the representations of a high focus and a low focus in Italian, in Rizzi's proposal, are the following:

(59) a. [$_{\mathbf{F}}$ la **MAGLIETTA**] ha vinto Gianni.
the T-shirt has won Gianni
'Gianni has won the T-shirt'
b. [$_{\text{FocP}}$ La maglietta [$_{\text{IP}}$ ha vinto Gianni t]].

(60) a. Gianni ha vinto [$_{\mathbf{F}}$ la **MAGLIETTA**]
Gianni has won the T-shirt
c. LF: [$_{\text{FocP}}$ La maglietta [$_{\text{IP}}$ ha vinto Gianni t]].

[62] The idea of LF Focus movement derives from Chomsky (1976). In that paper, Chomsky suggests a unified account, based on WCO, for three apparently unrelated phenomena: wh-movement, scope of universal quantifiers, and Focus. A wh-element in English moves to the left leaving a variable in situ; thus, a pronoun that precedes the variable of the wh-phrase cannot co-refer with the wh-phrase, as shown by Chomsky's example below:
(i) * Who$_i$ did the woman he$_i$ loved betray t$_i$?
The person who loves the woman cannot be the same person who is betrayed by the woman. The same happens with a quantifier, which undergoes leftward movement at LF and introduces a variable at that level:
(ii) a. * The woman he$_i$ loved betrayed someone$_i$
b. LF: Someone$_i$ the woman he$_i$ loved betrayed t$_i$
Crucially, Chomsky (1976) observes that, when the antecedent of the pronoun is focused, it also gives rise to a WCO effect, as shown in (3).
(iii) * The woman he$_i$ loved betrayed JOHN$_i$.
The person who loves the woman cannot be John. From the ungrammaticality of (iii), Chomsky deduces that "stress on John gives the word essentially the status of abound variable". Chomsky thus concludes that, at least at LF, the three sentences in (i)-(iii) have the same structure, namely the one in (iv), where 'Q' stays for a quantified expression, 'pro' stays for a pronoun, and 'x' stays for the variable bound by the moved Q:
(iv) Q$_i$ …….. pro$_i$ ……. x$_i$
Brody (1990) formulates the idea of LF movement in a different way. He proposes the Focus Criterion, which says that the specifier of a FocP must contain a [+Focus] phrase at S-structure, does not universally hold for all languages. In languages where it does not hold, like English, Focus movement takes place covertly.

Many authors (Zubizaretta (1998), Frascarelli (2000), Brunetti (2003), a.o)) have observed that a theoretical problem arises with an LF movement account for focus *in-situ*. Given the T-model, if focus is interpreted only at LF, how can the main prominence be assigned to it, that is, how can PF operate on the relevant structure? If the [+F] feature is checked in the LF branch, that is after Spell-Out, then it is not visible at the PF interface, because LF and PF can communicate only via the intermediation of syntax. However, this problem ceases to exist if we follow more recent reformulations of the minimalist theory outlined in Chomsky (2000, 2001). Chomsky eliminates covert movement and replaces it with the operation Agree, which establishes a relation at distance between an element and a feature.[63]

2.6 The (dis)-association of Focus from Syntax

As mentioned in the previous section (2.5), since discourse functions, e.g. focus and topic are encoded syntactically in phrase structure configurations they are expected to demonstrate syntactic properties, such as recursion. Since syntax is recursive, we would expect the information structure to be also recursive. In what follows, I will show that Greek does not permit recursive foci and that the information structure in Greek (with respect to focus) is not sensitive to the recursive organisation of syntactic structures. Moreover, I will consider an alternative proposal that the unavailability of recursive foci in Greek is due to prosodic factors, namely the fact that Greek allows only a single peak of prosodic prominence per utterance (in line with Arvaniti & Ladd 2009, Alexopoulou & Baltazani 2008).

In subsequent sections, I provide further evidence to show that the pragmatic structuring of the utterance should be represented independently of syntax and semantics. In particular, the remainder of this section is organized as follows: In section 2.6.2, I discuss the notion of subjacency and I show that subjacency is also independent of the partition of the sentence into new-given information. In section 2.6.3, I argue that semantic focus in Greek cannot affect the truth conditions associated with the sentence in NS. In section 2.6.4, I argue that ordering restrictions of left peripheral elements can be independent from the articulation of information

[63] While movement is feature-checking plus pied-piping of lexical material that is copied in a higher position, Agree is just feature-checking, so no movement of any sort is involved. Within this framework, Focus in situ does not move to the left covertly; rather, it checks its feature [+F] via Agree.

structure constraints. In section 2.6.5, I provide evidence against the quantificational operator properties of focus showing that WCO cannot constitute evidence for the syntactic reflex of quantification but should be rather treated as a discourse phenomenon. In section 2.6.6, I show that the cartographic approach is faced with a challenge to explain broad focus structures, as well as cases where the focus does not correspond to a constituent projecting phrase structure. Finally, the syntactic encoding of focus cannot account for the interaction between information structure and phonology.

2.6.1 Recursive focus in Greek

It was discussed earlier that foci are not recursive. Consider again the Italian example in (48a) repeated here in (61). On the contrary, topics allow for recursive structures (see section 2.5, example 48b).

(61) a. * [$_{F}$ **A GIANNI, IL LIBRO**], domani glielo doro senz' altro
'The book, to John, tomorrow, I'll give it to him for sure'

On the other hand, a number of authors have proposed that focus is actually recursive (Krifka 1991; Partee 1991; Rooth 1996). In particular, Krifka (1991) interprets the stress or pitch accent on *youngest* in the following example in (62) as an instance of focus within the topic structure *the president's* ***youngest*** *daughter*:

(62) A: So tell me about the people in the White House. Anything I should know?
B: [$_{T}$ The president's [$_{F}$ *YOUNGEST*] daughter][$_{F}$ hates the Delft **CHINA SET**].

Opposing to Krifka's view, Vallduví & Zacharski (1994) and Vallduví & Endgahl (1996) show that the adjective *youngest* does not convey the new information of the sentence. To illustrate their point, consider again the example in (62B), where boldface small capitals represent a focus-associated A-accent (nuclear stress), and italics small capitals indicate the topic-associated B-accent of English. The terms A-accent and B-accent are first introduced in Jackendoff (1972). In Pierrehumbert's (1980) intonational framework, A-accents correspond to a simplex high pitch accent (H*), generally followed by a falling boundary tone. Jackendoff's B-accent

corresponds to a complex fall-rise pitch accent (L+H*). Therefore, *youngest* carries a B-accent which is indicative of topichood rather than focushood.

Vallduví & Zacharski (1994) propose that (61) has the information structure shown in (63), which is identical to that in (64):

(63) A: So tell me about the people in the White House. Anything I should know?
B: [$_T$ The president's *YOUNGEST* daughter] [$_F$ hates the Delft **CHINA SET**].

(64) A: So tell me about the people in the White House. Anything I should know?
B: [$_T$ The president's daughter] [$_F$ hates the Delft **CHINA SET**].

The different pattern between the two examples above shows that in (63) the B-accent has shifted to the adjective. Following Steedman (1991), Vallduví & Zacharski (1994) interpret this shift as a case of deaccenting, triggered by the semantic notions of informativeness/givenness. They also argue that in the similar structures in Catalan, a language that does not display any deaccenting strategy, there is no accent in any part of the information that is topicalized, or part of the domain of givenness. They argue that if the accent on *youngest* were to be interpreted as focus, this focus should be present cross-linguistically. Therefore, they conclude that focus is not recursive in nature in accordance with cartography (similar issues will be discussed in Chapter 5).

Their conclusion turns out to be actually true also for Greek. Recursive foci have been claimed to be impossible in Greek according to Alexopoulou (1999), Alexopoulou & Baltazani (2008), Tsimpli (1995), Tsiplakou (1998). This can be shown in the ungrammatical sentences below in (65):

(65) a. *[$_F$ o **NIKOS**] epline [$_F$ ta **PIATA**]
The Nikos-nom washed-3sg the dishes-acc
'Nikos washed the dishes'

b. *[$_F$ o **NIKOS**] ipe oti o Kostas epline [$_F$ ta **PIATA**]
The Nikos-nom said-3sg that the Kostas-nom washed-3sg the dishes-acc
'Nikos said that Kostas washed the dishes'

c. [$_F$ o **NIKOS**] epline ta piata/ o Nikos epline [$_F$ ta **PIATA**].

The sentences in (65a-b) are ungrammatical because they contain two accented elements (Tsimpli 1995).[64] What actually makes (65a) impossible is the intent to build two equally possible accents of the type involved in (65c).

The same pattern extends to wh-questions. Unlike English, nuclear accent in Greek direct wh-questions (a L*+H in this case) is invariably aligned with the wh-element, such as (66a) (modulo echo wh-questions). On a par with (66a-b), the multiple wh-questions in (66b-c) are unacceptable.

(66) a. Pios epline ta piata?
Who-nom washed-3sg the dishes-acc
'Who washed the dishes?'

b. * **PIOS** epline **TI**?
Who-nom washed-3sg what-acc?
'Who washed what?'

c. * **PIOS** ipe oti o Kostas epline **TI**?
Who-nom said-3sg that the Kostas-nom washed-3sg what-acc?
'Who said that Kostas washed what?

Recursive wh-questions in Greek can only be indirect (67a) where there is no requirement that nuclear accent is aligned with the wh-element. (67a) has the prosodic structure of a declarative sentence with nuclear stress on the rightmost edge, as in (67b).

(67) a. pes mu [$_{\mathbf{F}}$ pios sinandise **PION**]?
Tell -2sg me [who-nom met whom-acc]
'Tell me who met whom'

b. o Kostas sinandise [$_{\mathbf{F}}$ ton **YANI**]
the Kostas-nom met-3sg/PS the Yani-acc
'Kostas met Yanis'

The contrast between (66b) and (67a) suggests that focus and wh-items may be recursive. However, answers to (67a) may *not* involve recursive focus in Greek. This

[64] Rizzi (1997) presents similar examples in Italian.

can be partly explained by Büring's (2003) view that answers to multiple wh-questions involve special strategies (e.g. contrastive topic). It is well known that multiple questions elicit pair list answers which, more often than not, employ topic-focus rather than focus-focus patterns (Bolinger 1978). This is also true in Greek. Answers to (67a) employ topic-focus patterns involving either a topicalised subject and a focal object or a topicalised/CLLD-ed object and a focal subject (68).

(68) [$_{F}$ to **YANI**] ton sinandise o Kostas, [$_{F}$ to **VASILI**] i Eleni…
the Yani-acc him-cl met-3sg the Kostas-nom, the Vasili-acc it i Eleni-nom…
'Kostas met Yani, Eleni met Vasilis…'

Büring (2003) explains the apparent mismatch between a focus-focus context set up by a recursive wh-question and the standard (contrastive) topic-focus answers such questions receive due to a strategy of answering a set of sub-questions implicitly involved in the 'super-questions' denoted by multiple questions. A question like *who met who?* involves two sets of sub-questions, sorted by *who met Kostas/Panos?* and *who did Eleni/Petros meet*? A topic-focus pattern as in (67)-(68) reflects a choice of one set of sub-questions.

Let us now explore the case of embedded clauses to see whether recursive occurrences of focus are present there; that is, whether they have their own recursive focus-background structure independent from that of the main clause. The information structure of embedded clauses has not received much attention in the literature. Vallduví & Zacharski (1994) leave open the possibility that embedded clauses may have their own information structure. They acknowledge that, in this respect, the focus-background partition is recursive. In contrast, Heycock (1993) observes that a recursive syntactic structure may correspond to a non-recursive information structure unit. For example, the topic in (69) contains a whole embedded clause:

(69) A: What do you think of the allegations that John is a liar'
B: [$_{T}$The allegations that John is dishonest] [$_{F}$ **ARE FALSE**].
(Heycock 1993: ex: 31)

With respect to Greek, Tsimpli (1995) and Tsiplakou (1998) note that recursive foci are ungrammatical in sentences containing a subordinate clause. Consider the following example in (70):

(70) *[$_F$ sti **MARIA**] ipe oti sinandise [$_F$ ton **PETRO**]
to the Maria-acc said-3sg that met-3sg the Peter-acc
'He said to Maria that he met Peter'

According to Tsimpli (1995), the ungrammaticality of (70) follows from the fact that focus takes widest scope. In (71) both focused constituents belong to the embedded clause and only one of them has undergone extraction (Tsimpli 1996; Tsiplakou 1998). If the focus operator has a predetermined sentential scope position, the co-occurrence of focus phrases is excluded even if one belongs to the matrix and the other to the embedded clause as in (71), that is, (71) with one focused constituent per clause it is still ungrammatical.

(71) *o **NIKOS** ipe oti epline ta **PIATA**
The Nikos-nom said-3sg that washed-3sg the dishes-acc
'Nikos said that he washed the dishes'

What the examples in (70) and (71) show is that embedded clauses do not have their own information structure. This means that, since a second focus is not allowed, the whole sentence has a single information structure. Indeed in most cases seen in the literature it is very difficult to distinguish the information structure of the main clause from that of the embedded clause. In some cases, the focus of the utterance is the embedded clause.

Now consider the following examples from Alexopoulou (1999):

(72) A: What did he say?
B: He said [$_F$ they are going to fire **JOHN**]

(73) A: Ti ipe?
'What did he say?

B: ipe [$_{F}$ oti tha dioksun to **YANI**]
said-3sg that will fire-3pl the John-acc
'S/he said that they will fire John'
(Alexopoulou 1999: ex: 2.78-2.79)

In (72-73), it is possible to claim that the embedded clause has its own information structure and that it constitutes an all-focus response. However, consider an example in which the focus of the sentence is a constituent within the embedded clause:

(74) A: Who did he say they are going to fire?
B: He said that they are going to fire [$_{F}$ **JOHN**]

(75) A: **PION** ipe oti tha dioksun?
'Who did s/he say they are going to fire?'
B: ipe oti tha dioksun [$_{F}$ to **YANI**]
said-3sg that will fire-3pl the John-acc
'S/he said that they will fire John'

Thus, examples (74-75) still show that, in a significant number of cases, the information structure of the main clause is indistinguishable from that of the embedded clause. The given part is all the material - except from the embedded object - containing information from both the main and the embedded clause. The next question is, whether there are any cases at all where the two can be distinguished. To meet this end, I will consider examples where recursive foci are forced in the answer by the discourse context, i.e. a question.

Consider a situation where you have a list of invited friends to a party but the number of guests turned out to be too big. So you want to know who invited whom.

(76) A: boris na mu pis ***pios*** ithele na kalesume
A*: can-2sg to me-cl tell-2sg who-nom wanted-3sg to invite-1pl*
pion sto party;
who-acc at the party
'Can you tell me who wanted to invite whom at the party?

B: o Nikos ithele na kalesume [$_F$ tin **ELENI**] (sto party)
B*: the Nikos-nom wanted-3sg to invite-1pl the Eleni-acc (at the party)*
'Nikos wanted to invite Eleni (at the party)
ke o Kostas [$_F$ ti **MARIA**]
and the Kostas-nom the Maria-ccc
and Kostas Maria'.
C: *[$_F$ o **NIKOS**] ithele na kalesoume [$_F$ tin **ELENI**].

Despite the fact that the question in (76A) has two wh-phrases, only one phrase is actually focused in the answer. Example (76C) which has two accented phrases corresponding to the wh-phrases in the questions is ungrammatical. Note, though the following example which encodes surprise or unexpected information:

(77) Look who came to the party! …
[$_F$ o **NÍKOS]** mas ipe na kalesoume tin **ELÉNI** sto party.
The Nikos us-cl said-3sg to invite-1pl the Eleni-acc at the party.
'Nikos told us to invite Eleni at the party.

The example in (77) is grammatical even if it has two accented constituents. By contrast, examples like (76C) are ungrammatical. The difference in grammaticality seems to rest on the strength of the accent of *Eleni*. It must be the case that the accent on *Eleni* is perceived as weaker than the one on *Nikos*. By contrast, the accents on both constituents in (77) are meant to have equal intensity. However, what is interesting here is that even though Greek does not allow for recursive accents, this ban is not operational in contexts that require recursive foci. Thus, in a context that requires recursive foci, the information structure partition is not organized in a recursive way.

Consider also a 'contrastive' focus scenario where you are in a furniture shop buying the furniture for a friend's house and you are asking another friend 'who will buy the chairs':

(78) A: telika pios tha agorasi tis karekles?
Finally who will buy the chairs?

B: Den ksero, pandos [$_{F}$ i **MARÍA**] mu ipe oti apofasise
Not know, though the Maria-nom to-me said-3sg that decided-3sg/PS
na agorasi [to **TRAPÉZI]**
to buy-3sg the table-acc
'I don't know though Maria told me that she decided to buy the table'

Example (78) is grammatical with two accented constituents: the subject of the main clause and the object of the embedded clause. This is a 'discontinuous' focus structure, namely, the focus in the answer does not answer the question directly but through a 'contrastive strategy'. The subject *i Maria* indirectly answers *pios* since *Maria* is not the person that will buy the chairs. Also *trapezi* is contrasted with *karekles* and appears to constitute new information. Here, the information structure of the main clause is distinguished from that of the embedded clause and recursive foci are permitted as enforced by discourse requirements (e.g. speakers' choices to answer the question using specific strategies. Of course, one could argue that the first accented element *Maria* is a contrastive topic in the sense of Büring (2003). Although the context probably presupposes a set of sub-questions related to furniture and a set of sub-questions related to buyers, both foci contain contrasted/unexpected information in that they do not directly answer the question in (78A).[65]

To summarize, examples (70-78) show that, in cases where recursive foci are not permitted in Greek, the information structure of embedded clauses is not distinguished from that of main clauses. The evidence shows that recursive syntactic structures are always associated with a non-recursive information structure. The non-recursive nature of the focus-background partition strongly supports the idea that information structure should be represented independently of syntax.[66] Recursiveness could be a syntactic property independent of the information structure of the sentence.

Overall, what the above evidence suggests is that in general recursive focus structures in Greek are unavailable. This is mainly due to the unavailability of recursive accents. However, when contextual requirements permit it (e.g. stress giving rise to a contrastive or unexpected interpretation), recursive accents are present. Alexopoulou & Baltazani (2008) show that the unavailability of recursive foci is the

[65]There remains to test the melodic intensity of the two focused elements and what pragmatic correlation it reveals. One of the two accents might be perceived as weaker than the other.
[66] See also Alexopoulou 1999 for a similar argument although motivated by independent reasons.

result of a non-isomorphic mapping between a system of recursive (discrete) categories to a system of gradient categories organised around the concept of prominence. In particular, they argue for a metrical approach to stress, which advocates that it is not pitch accent *per se*, but rather, relative metrical strength that signals focus (Arvaniti & Ladd 2009). Crucially, the implication is that there is only a single peak of prominence in relative units (phonological phrase or utterance). Multiple peaks of prominence are unavailable under this approach and, hence, multiple foci or wh-. They make the assumption that prominence peaks operate on the utterance level in Greek but on potentially smaller units in English; that is why two prominence peaks are not allowed.[67]

The unavailability of recursive foci and direct wh-questions is puzzling vis a vis the availability of recursive topics (79). The contrast is particularly challenging for theories where (contrastive) topics involve focus values (e.g. Büring 2003; Steedman 2000).

(79) a. Tis Marias, ta vivlia, (ta) estile o Janis
to Mary-dat the books-acc (cl.PL)sent-3sg John-nom
"John sent the books to Mary"

b. Afti, to vivlio, nomizo oti ston Petro ine sigouro oti den
they-nom the book-acc think-1sg that to the Petro-acc is certain that not
tha to epistrepsun
will it-cl return
"I think that it is certain they will not return the book to Peter".

(Tsimpli 1995 ex: 18)

These topics are indeed recursive in nature. This is explained in Tsimpli (1995) as an indication that topicalized phrases do not involve operator movement, but they are

[67] See Ladd's (2008) discussion of examples like I didn't give hime SEVen EUros, I gave him FIVE FRANCS.

base-generated in their surface position under the adjoined Top position.[68] Example (79b) involves topicalization of more than one category out of the embedded clause.

2.6.2 Subjacency

The second issue involves syntactic constraints such as subjacency. It has been claimed that focus is insensitive to syntactic constraints, like subjacency; the focused element can appear within a strong island (Giannakidou 1997; Rooth 1985, 1996; Jackendoff 1972; von Stechow 1991; Partee 1991; Hajičová, Partee and Sgall 1996). Since focus involves movement (LF movement), focusing/extraction of the focused element should be impossible within a barrier for extraction (Chomsky 1986). That is not the case as can be seen in the following examples in (80)-(85), where focus disregards a number of syntactic islands. The main issue that (in accordance with the aforementioned authors) appears problematic for the movement approach is that, in principle, any constituent may function either as the focus or given element.[69] In effect, there is no correspondence between syntactic constituents and the given-focus partition of the sentence.

(80) *Focus on an embedded subject (that-trace effects are expected):*
Gary thinks that JOHN will play the saxophone

(81) *Focus within an adjunct*
Sophie visited the hospital because she was feeling SICK

(82) *Focus within shifted Heavy NPs:*
I read yesterday all the books MY teacher recommended.

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[68] However, Tsimpli (1995) examines the possibility that topicalized phrases may involve operator movement at LF.

[69] Reinhart (1991) also notes that the stressed NPs in (1) are contained in strong (ungoverned) islands:

(1) a. [$_{IP}$ [$_{CP}$ That Linda argued with THE CHAIRMAN] is surprising].
b. [IP [$_{NP}$ Even the paper that LUCIE submitted to our journal] was weak].

Extraction of the focused elements should therefore be impossible. The following examples (2) and (3) are from Horvath (1999). Examples (4) and (5) are from Jackendoff (1997). They both make a point similar to the one made by Reinhart (1991):

(2) Q. Do people wonder where Mary was last night?
A. No, people wonder where [Mary's BOYFRIEND] was last night.

(3) Q. Have you shown Bill the book that I gave you for your birthday?
A. No, I have (only) shown him the book that you gave me for CHRISTMAS.

(4) a. Is John certain to WIN the election?, which could not have LF:
b. *[win$_i$ [is John certain to t*i* the election]]

(5) a. Does Bill eat PORK and shellfish? which could not have LF:
b. *[pork$_i$ [does Bill eat t$_i$ and shellfish]]

(83) *Focus inside Wh-islands:*
John doubts whether I will learn THIS PARAGRAPH

(84) *Focus inside a complex NP:*
John scheduled a meeting to close TWO contracts this evening

(85) *Focus within a coordinate structure:*
Alex and Helen and ALL the other colleagues

They argue that the semantic representation of the syntactic structures in (80-85) would allow for the assignment of a focus value to the focus constituent or covert movement from the lower clause to the main clause for interpretation (similar examples are also presented in Costa 1998).

The covert movement is not constrained by subjacency though. What subjacency actually constraints, is the extraction of a focused element. According to Huang (1982) subjacency constrains overt movement. This is actually true also in Greek as shown in the difference between (86) and (87). Indeed, focus movement out of a strong island is ungrammatical in Greek as shown in (86).[70] The example in (86) is a case of extraction out of a sentential adjunct:

(86) *Focus movement*
*[$_{F}$ tin **KINISI**] efigan noris gia na apofigun
the traffic-acc left-3pl early in order to avoid-3pl
'They left early to avoid the traffic'

(87) klisane tin porta amesos gia na akui o Makis
closed-3sg the door-acc immediately for.part listen the Makis-nom
pu miluse [$_{F}$ stin **ELENI**]
who-comp talk-3sg to-Past-Prog the Helen-acc
'They closed the door immediately so that John who was talking to Helen could listen'.

The focused constituent *Eleni* in the embedded clause in (87) does not violate subjacency similarly to the examples in (80-85). The LF representation of the sentence

[70]For similar examples in other languages see Kiss (1995a), Cinque (1990), Dobrovie-Sorin (1990), Sanfilippo (1990), Hoffman (1995) among others.

would involve the assignment of a focus value or LF movement of the embedded focused element of the lower clause to the top node of the matrix clause. This is not constrained by subjacency. Therefore, the two cases are distinct.[71] In this respect, one could argue that the syntax of focus movement and focus with respect to subjacency are two processes essentially different; this is suggestive that the representation of focus should be independent of syntax.

However, the above picture is not conclusive in arguing for the dissociation of focus from LF: the examples in (80-87) are actually inconclusive as they all involve *argument* focus-phrases appearing inside strong islands. Argument focus-phrases behave similarly to argument wh-phrases inside strong islands which are subject to subjacency violations when it comes to extraction. Consider the following example in (88):

(88) a. ? [$_{CP1}$ Whose car were **[$_{IP1}$** you wondering [$_{CP2}$ how $_j$ **[$_{IP2}$** to fix t_i t_j]?

On the other hand, there are important differences between argument wh-phrases and adjunct wh-elements with regard to extraction. Compare the direct object wh-element extraction from wh-island in (88) with the extraction of an adverbial element from the same island in (89):

(89) a. * How$_j$ were you wondering [WHOSE CAR$_i$ TO FIX t_i t_j]?

The difference between (88) and (89) is that while the argument extraction example is quite akward, it is nevertheless intelligible; in (89), on the other hand, it is all but impossible to see the interpretation that is being looked for (with *how* interpreted as modifying the lower clause, looking for an answer like 'with a spanner'). This suggests that the badness of the adjunct-extraction has to do with an LF condition which prevents certain interpretations. This is where the ECP, an LF condition on traces, stating that traces must be properly governed (lexical and antecedent government), comes in (cf. 90). The ECP basically requires that an empty element, an adjunct trace, be subjacent to its

[71] Needless to say that pied-piping is not an option for deriving the sentences in (25-30), given the exclusion of LF pied-piping. And even if covert pied-piping were permitted, it should not apply in sentences (i) and (ii), since if a *wh*-word is substituted for the focus, pied-piping is impossible:
(i) *What paragraph does John doubt whether I will learn
(ii) * Which contracts did John schedule a meeting to close this evening?

antecedent, otherwise it will not be licensed at LF. If the trace fails to be licensed at LF, then the interpretation of the antecedent-trace relation will not be available, and the effect of uninterpretability that we notice in (89) arises.

(90) ECP: Every trace must be properly governed
Proper Government: *α* properly governs *β* if:
i. *α* θ-governs or
ii. *α* antecedent governs *β.*

In this line of analysis, unlike arguments, which are lexically selected by a head and thus theta governed, adjuncts are not lexically selected (thus lacking theta government) and need to satisfy the second clause of the ECP, i.e. via antecedent government (90). This is what was early noted in Huang (1982), basically that adjunct wh-elements inside wh-islands cannot be interpreted. Huang interprets this fact as showing that adjuncts cannot move out of wh-islands at LF (comparing with Chinese). He thus proposes that the ECP is an LF condition on traces of covert movement, while subjacency only constrains overt movement. Hence, we have no clear way to connect subjacency with the argument against LF movement, because the latter is related to ECP, while the former involves derivations, since violations of subjacency give rise to syntactic awkwardness rather than uninterpretability on the intented meaning.

We can conclude that the ability of an argument focus-phrase to appear inside strong islands does not amount to evidence against its LF-movement. What we need are examples showing that an adjunct focus-phrase can appear inside strong islands. The following example from Greek could actually form a case supporting the view just described. This is a case of an adjunct focus phrase inside an island, a temporal adjunct:

(91) a.epidiorthosa tin tileorasi prin erthi o Kostas [$_{\mathbf{F}}$ apo ti **DOULEIA**]
repaired-1sg the tv-acc before came-3sg the Kostas-nom from the work-acc
'I repaired the TV before Kostas came from work *(not from the pub)*'
b.*[$_{\mathbf{F}}$ apo ti **DOULEIA**]$_i$ epidiorthosa tin tileorasi prin erthi o Kostas t_i

While the adjunct focus phrase can be appear inside the strong island, in (91a), extraction of the adjunct out of the island, in (91b), results in ungrammaticality; a serious violation of subjacency.

Let us look also at the following example of Clitic Left Disclocation (CLLD). In Greek, CLLD behaves similarly to focus movement in that it obeys strong islands. The following examples are complex noun phrase violations (examples also discussed in Tsimpli (1995)).

(92) CLLD

a. *ta ellinika synandisa kapius pu ta milane
in Greek met-1sg some people-acc that cl-them speak-3pl
'I met some people that speak Greek'

b. ta ellinika synandisa kapius pu ta milane [$_F$ **SOSTA**]
in Greek met-1sg some people-acc that cl-speak-3pl correctly
'I met some people that speak Greek correctly'

In (92a) the clitic dislocated NP *ta ellinika* is sensitive to the extraction out of the relative clause. In constrast, in (92b) where the adjunct relative is coindexed with the adverbial *sosta* the structure becomes grammatical. I presume that there is an obvious intonational break after the CLLD NP *ta ellinika* with the rest of the clause. This break is not enough though to recover the ungrammaticality of (92a). It is not clear how a syntactic account can argue for these cases. It seems that their difference is a matter of phonology (processing or parsing) which affects the grammaticality of the sentences rather than syntax. This is a point for further research.

In the following section, I provide evidence supporting the view that information structure is independent from the semantic component, in the sense that information packaging does not affect the propositional content of a sentence and discuss other important issues related to the integration of focus at the semantic component.

2.6.3 Focus and the Semantic Component

Since Jackendoff (1972), it is widely accepted that certain adverbs such as even, always and only associate with focus. The idea that pragmatic focus interacts directly with the propositional content of the sentence has accounted for proposals where focus is seen as a semantic operator that interacts in various ways with other semantic operators (Rooth 1996, Krifka 1991, Partee 1991). This suggests that focus can affect

the propositional content, the truth conditions of a sentence. The association of only/even/always with focus is indicated by the fact that at LF the focused element and the adverbials must be found in a relation of sisterhood. At LF, the focused phrase moves and adjoins the focus sensitive adverb as in (93).

(93) a. Mark only loves [$_F$ **MARY**]. **S-Structure**
b. Mark only Mary$_i$ loves t$_i$ **LF**

Although it has been widely acknowledged that focus provides the nucleus of other semantic operators, various authors (Vallduví 1992; Vallduví & Zackarski 1994) show that focus and association with operators or adverbials are two distinct phenomena. In the following examples, the semantic operators are associated with the *given* information of the sentence and not with focus.

(94) John and Mary know the Amazon quite well,
but only John's been [$_F$ to the **CITIES**] in Brazil
(example from Vallduví & Zackarski 1994)

(95) Who did John only introduce Bill to?
John only introduced Bill to [$_F$ **SUE**]
(example from Vallduví 1992)

In the next example (96) the adverb *always* is associated with John rather than Mary:

(96) Who always took **JOHN** to the movies?
[$_F$ **MARY**] always took John to the movies.
(example from Vallduví & Zackarski 1994)

Moreover, the semantic operator may be associated with only a part of focus and not focus as a whole. Consider the following example:

(97) There is only three weeks till **GRADUATION** now

In addition, let us consider again the following example in (32) repeated here in (98) which supports part of the S-IS underdeterminacy Hypothesis:

(98) a. i mitera katharise to spiti **SVO**
'The mother cleaned the house'

b. *Who cleaned the house?*
[$_{F}$ i **MITERA**] (katharise to spiti)

c. *Did the mother sleep or cleaned the house?*
i mitera [$_{F}$ **KATHARISE**] to spiti

d. *What did the mother clean?*
(i mitera katharise) [$_{F}$ to **SPITI**]

e. *What did the mother do?*
(i mitera) [$_{F}$ katharise to **SPITI**]

In (98a-e), the SVO structure 'the mother cleaned the house' - given the different stress assignments – may encode different information structure partitions. However, this difference is not one of propositional content; it does not affect the truth conditions of the sentence. All utterances have the same propositional content; nevertheless, they are not interchangeable in context. What decides their integration/appropriateness in context is their intonational structure, the position of the main prominence.

Anticipating the discussion to follow, in Chapter 4 (section 4.2), I argue--based on (98)--that the intonation of an utterance is the link between the 'meaning' of the utterance and its context. The different 'meanings' are the effect of the function of intonation which aims directly to link the utterance with its appropriate context. Thus, stress assignment disambiguates context and is relevant in defining the 'meaning' of the utterance.[72] In this respect, I argue that focus or more specifically semantic focus in Greek does not affect the propositional content of the sentence; semantic focus cannot affect the truth conditions of the sentence in NS, but it is the *prosodically* determined focus which can affect the truth conditions associated with the utterance in discourse; it involves the interpretation of the utterance in discourse with its associated prosodic accent contour. As a result, without their intonational contours, the utterances in (98) are ambiguous into multiple interpretations (however, not

[72] This argument has a very long tradition: (Bolinger (1965), Halliday (1967), Jackendoff (1972), Ladd (1980, 1996), Gussenhoven (1984), Selkirk (1984, 1995), Erteschik-Shir (1986), Pierrehumbert and Hirschberg (1990), Steedman (1991), Vallduví (1990), Roberts (1996), Büring (1999, 1997b), Schwarzschild (1999) among others)

ambiguous in propositional content). In effect, I argue that information packaging does not affect the propositional content of a sentence in NS (Chapter 4: 4.2).

Another quite important shortcoming of the integration of focus directly into syntax and its subsequent encoding at LF (semantics) has been pointed out by Zubizaretta (1998), Vallduví (1992), Lambrecht (1994) raising the issue of the relation between function and form, or in other terms the relation between focus and syntactic constituency. We will come back to this issue in much more detail in Chapter 5. For the time being, suffice it to say that if an entity must be interpreted as focus at LF via movement – in a syntactic view of focus – it needs to correspond to a syntactic constituent. However, this is not always a case. We need an account that allows focus to correspond to non-constituents, that is information structure units, such as Vallduví (1992), Steedman (1991, 2000), Erteshik-Shir (1997), Büring (2006).

Another critical question that comes to one's mind is the following: If focus is realized *in situ* in languages such as English which employ mainly prosodic means to encode new information, why focus has to move at LF? The answer lies in the common assumption shared by many linguists who work on the syntactic encoding of discourse functions (as was already discussed in sections 2.2 and 2.3) that there is a direct mapping from structural position to semantic interpretation. In other words, elements found in a designated focus position will be interpreted as focused and correspondingly, elements that need to be interpreted as focused or receive a special semantic focus interpretation need to be associated with and find themselves in a pre-determined focus position. Anticipating the discussion to follow, I will discuss this issue in Chapter 3. I will show that at least in Greek there is no systemantic correlation between syntactic position and semantic interpretation.

Although the manifestation of focus is relevant for the semantic component - a part of the semantic component relevant to information structure (e.g. association with focus) and not compositional semantics -, the idea that this relevance could motivate movement at LF complicates the architecture of grammar rather than providing a uniform account cross-linguistically. On a first note, Vallduví (1992) argues quite extensively that there should be an independent information component in the grammar, given the fact that focus does not change the truth-value of a sentence in the same way that other operators do. Leaving aside this dispute for the moment, the complexity created by LF movement allows the grammar to contain two mechanisms for identifying

focus: a surface overt mechanism based on rearrangements carried out for the sake of a successful mapping onto interpretation, enabling an unambiguous identification of the focus of a sentence on the one hand, and a movement operation at LF which has the purpose of identifying focus at the semantic compoment on the other.

Hence, what we deal with is a duplicate, and as a result a conceptual redundancy, namely two operations/mechanisms allowed by the grammar to serve the same purpose in the same language: to identify focus on two separate levels. In effect, this theory is not economical. If we compare it with other cases of covert/overt movement such as wh-movement, it is not the case that these also involve a duplication of licensing mechanisms. For instance, wh-*in-situ* languages do not resort to other operations in order to identify wh-*in-situ*. The only difference between, say Chinese and English has to do with the word order re-arrangements and not with interpretation.

Moreover, Rizzi implies that not all topics and foci that are in situ on the surface should be fronted in LF, providing the following obscure statement:

> [I]t is reasonable to assume that the topic-focus system is present in a structure only 'if needed', i.e. when a constituent bears topic or focus features to be specified by a Spec-head criterion'. (1997: 288)

The question that arises is what determines which such features need to be specified and which do not. He postulates what he calls 'Subj-Predicate' articulation and suggests that *in-situ* subject-topics are interpreted as in (99c), parallel to (99a) and (99b):

(99) a. [XP [Top Comment]]
b. [XP [Foc Presupposition]]
c. [XP [Subj Predicate]]

It is very vague what the discourse interpretation of 'Subj-Predicate' could be and how can be distinguished from Topic-Comment. It is not very clear how he defines notions such as 'subject' and 'predicate' as information structure notions. In Lambrecht (1994), a subject and a predicate can actually form a topic-comment relation, which is distinct from a focus-presupposition articulation (see also discussion in Chapter 5: 5.7.1).

Rizzi (1997) suggests that the fronted topics of (99a) need to be D-linked, while the subjects of (99c) need not be. However, as Newmeyer (2004) points out not all fronted topics are D-linked:

(100) A filing cabinet that heavy you would never get me to lift.

A filing cabinet can be a discourse topic without being D-linked. Sentence (100) could be uttered without any discourse antecedence at all. Reinhart (1981), following Strawson (1964), proposed that when an utterance is assessed in context, this process involves checking 'predication', where one expression in the sentence is taken as the argument and the rest as the predicate. The argument is the topic of the utterance in the given context; the predicate is the comment. Syntactic considerations may constrain what the topic (i.e. the argument of the predication) may be. For instance, in passives, the topic must be the subject and in clitic-left dislocation, the topic is always the dislocated element.

In the previous section, I showed that the syntactic property of recursiveness with respect to focus is independent of the partition of the sentence into given-new information. InfoStucture is not organized in a recursive way as syntax is. Also, the syntax of focus with respect to subjacency suggests that the representation of focus should be independent from syntax. In this section, I argued that focus should be free of LF semantics in that semantic focus does not directly affect the truth conditions of the sentence.

2.6.4 Against the rigid ordering of Discourse Functions

Recall that the second assumption of the syntax-based approaches postulates that the ordering of topics, foci and wh-phrases is enforced by the strict ordering of the functional make-up of the sentence. Cartography tacitly adopts a radically 'decompositional' approach to syntactic categories: if there are two distinct interpretive effects, there must be distinct positions in which these are licensed. Consequently, every semantic feature that has syntactic import must head its own functional projection. This drives the cartographic research to the postulation of a highly articulated phrase structure found in much recent work.

The primary support for the architecture proposed in section 2.3 comes from what appears to be ordering restrictions in the left periphery. Consider, again the architecture of the left periphery, repeated here in (101):

(101) Split-CP: [ForceP [TopP* [FocP [TopP* [FinP [IP….

For example, Rizzi (1997) points out that preposed topics follow *wh*-relative pronouns, but precede *wh*- interrogative pronouns, as in (102) and (103).

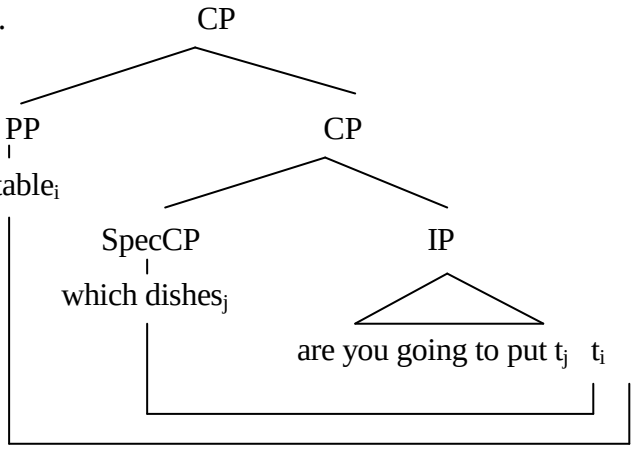
(102) a. the man to whom liberty, we could never grant (Baltin 1982)
b. * the man, liberty, to whom we could never grant

(103) a. On the table, which dishes are you going to put? (Culicover 1991)
b. *Which dishes are, on the table, you going to put?

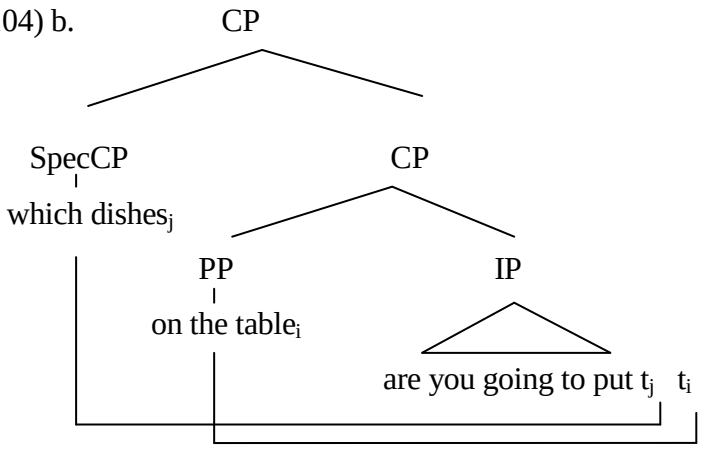
(Newmeyer 2004: ex: 7-8)

Evidence like the above would seem to support the idea of a wh-relative projection above the topic projection, and in turn above the *wh*-interrogative projection. The ungrammatical examples are clear violations of Rizzi's ordering restrictions. However, as pointed out in Newmeyer (2004), the above ungrammaticalities follow from an independent principle, the Nested Dependence Constraint (Fodor 1978, 1984; Pesetsky 1987). Consider the structures of (103a-b) represented in (104a) and (104b) respectively:

(104) a.



(104) b.



As the trees clearly indicate, the grammatical expressions comply with the Nested Dependence Constraint in (105), while the deviant ones violate it.

(105) NESTED DEPENDENCY CONSTRAINT (Fodor 1978, 1984; Pesetsky 1987):
Multiple filler-gap dependencies may be disjoint or nested but not intersecting.

As a result there is no need to posit separate projections for interrogative and relative pronouns. There is a wide range of acceptability regarding sentences like (103a) in the literature. Other similar sentences are clearly bad, for example (106a, b) and others much better, for example (106c, d):

(106) a. * The book to whom did you give? (Baltin 1982)
b. * Robin who will talk to? (Culicover 1991)
c. ? On that subject, who should I consult with? (Haegeman & Gueron 1999)
d. During the holidays, which book will you read? (Haegeman & Gueron 1999)

Moreover, example (103b) improves in acceptability in the following sentence:

(107) On which table, those dishes, are you going to put?

Here the wh-interrogative pronoun becomes a PP and the example becomes equally acceptable as in (103a). In effect, the acceptability of structures such as (103b) recovers and Rizzi's examples become acceptable. I believe that the increased acceptability in examples like (103c, d) is a result of the fact that the preposed PP acts as a topic, which

precedes the wh-interrogative or the wh-interrogative becomes a PP itself, as in the case of (106). Actually, these structures bear a resemblance to structures having implicit 'stage' topics. Consider a simple example such as (108):

(108) There is a cat outside the door.

Implicit 'stage' topics indicate spatio-temporal parameters of a sentence (the here-and-now of the discourse).[73] These are contextually defined. In (108) the current time and location functions as an implicit topic with respect to which the sentence is evaluated. The PP *outside the door* modifies this location, so that the sentence will be true only if there is a cat outside the door. Compare it with (109) which has an overt fronted locative topic PP *outside the door*:

(109) Outside the door, there is a cat.

Here the fronted PP is an overt topic which specifies the location with respect to which the sentence is evaluated. This overt stage topic is completed by the current spatio-temporal parameters, which tell us where the door is located and at which time the sentence is supposed to be true.

Let us now consider the issue of adjacency. It is a cross-linguistic requirement that foci appear mainly preverbally and adjacent to the verb. Brody (1990) and Hórvath (1986) have argued this for Hungarian, Hoffman (1995) for Turkish, King (1995) for Russian, Tsimpli (1995) for Greek, Vallduví (1992) for Spanish, a.o. However, Italian and Catalan according to Rizzi (1997) and Vallduví (1992) respectively do not require adjacency. The same counts for Greek. Actually in Greek the requirement of adjacency is weakened considerably in cases where the focus is contrastive and is more evident in wh-question contexts which induce information focus.

(110) [$_{\mathbf{F}}$ tin **ALITHIA**] o Giorgos paradextike sto dikastirio

[73] It has often been proposed that sentence-initial spatio-temporal elements specify the frame in which the whole proposition takes place and are topical (*i.e*. thematic). Whereas considerable attention has been paid to explicit spatio-temporal topics, Erteschik-Shir (1997, 1999) argues that spatio-temporal topics, or *stage topics*, can also be implicit.Erteshik-Shir (2007) adopts a Strawsonian definition of topics, according to which topics are the pivots for assessing spatio-temporal relations, every sentence has one discussing thetic sentences in discourses such as:

(1) Q: What happened?
A: John washed the dishes!

the truth-acc the George admitted-3sg in the court
'It was the truth that George admitted in the court'

As it can be seen in (110) the requirement for adjacency cannot be predicted here. The object *tin alithia* is not adjacent to the verb and the structure is acceptable; it can be perceived easily with a contrastive reading. Thus, the rigidly fixed ordering imposed by syntactocentric approaches is not always empirically justified across and within languages.

The requirement for adjacency can actually be phonological according to several authors (Erteshik-Shir 1997, 2006; Kidwai 2000; Szendöi 2005; Hórvath 2007). Cross-linguistically, focus movement seems to instantiate characteristics that are typical prosodic properties, such as adjacency, edge-sensitivity and directionality. Adjacency requirements can be considered as a prosodic manifestation. One such case is cliticization. Clitics, are prosodically weak elements, they have to appear either immediately to the left or immediately to the right of the verb (or the finite auxiliary or the complementizer) in many languages (Baltazani 2002; Revithiadou 2004 for Greek). Neeleman & Weerman (1999) offer a prosodic approach to case adjacency. Edge-sensitivity is also often attested in prosody (Revithiadou 2004 for Greek, Selkirk 1995 for English; Samek-Lodovici 2006 for Italian). For instance, extrametricality is an *edge* phenomenon. Finally, left and right directionality is also highly relevant in stress-based systems, as well as to cliticisation (as in enclitics and proclitics).

From a discourse point of view, we could argue that ordering constraints which regulate violations of adjacency are subject to gradience of acceptability judgements of the kind proposed in Keller (1998), Alexopoulou (1999), Bard et al. (1996), Fanselow et al. (2006), Sorace & Keller (2006), where violations of discourse constraints do not give rise to strong ungrammaticalities as opposed to syntactic constraints (on phrase structure, number or case agreement and subcategorization requirements, syntactic constraints on word order). Due to the fact that discourse elements - ground, given, foci, topics - are not realized by specific syntactic categories (head, complement, etc.) and the given-focus partitioning is organized along utterances rather than specific constituents, the violations of discourse constraints appear as *soft* constraint violations in line with Keller (2000). Alexopoulou (1999) argues that discourse constraints should be represented independently from syntactic ones arguing for a HPSG approach of ordering constraints. A question that arises is

whether the discourse factors influencing acceptability are internal or external to grammar.

2.6.5 Is Focus Quantificational?

According to the third Cartographic assumption, Topicalization and Focus movement involve distinct syntactic movements. The difference between the two constructions is that focus is a quantificational semantic operator which instantiates quantificational A´ movement, while Topicalization involves anaphoric A ´ movement (referential in Lasnik & Stowell's 1991 terms) and is not quantificational (also discussed in section 2.5.1).

(111) a. Gianni, sua_i madre lo_i ha sempre apprezzato
'Gianni, his mother always appreciated him'
b. [$_F$ **GIANNI**]$_i$, sua $*_i/_j$ madre ha sempre apprezzato t (non Piero)
'GIANNI, his mother always appreciated, not Piero'
(Rizzi 1995:ex.17-18)

Recall the quantificational properties of foci as opposed to topics are evident from three characteristics: the induction of WCO effects, the intolerance of resumptive pronouns and the focalization of bare quantificational elements.

The Weak Crossover Effect has been considered a syntactic reflex of quantification (Larson & Segal 1995, Lasnik & Stowell 1991). This generalisation belongs to Lasnik & Stowell (1991) who drew attention to the fact that WCO effects are present only in a subset of instances of A-bar movement, i.e. movement to non-argument positions (Haegeman 1991). In particular, Wh-movement and Quantifier Raising (QR) are sensititive to WCO, whereas Topicalisation, Tough Movement and Parasitic Gap constructions are not. Examples (112-113) show some of the cases they discuss; examples (112a, b) show the LF representations of a Wh- question and a QR construction.

(112) a *Who$_i$ [$_{IP}$ does [$_{NP}$ his$_i$ boss] [$_{VP}$ dislike t$_i$]]
b. *No man$_i$ [$_{IP}$ [$_{NP}$ his$_i$ friends] should [$_{VP}$ mistreat t$_i$]]
(Lasnik & Stowell 1991: ex. 13 b-d)

(113) a [John$_i$ [NO$_i$ [I believe his$_i$ mother loves e$_i$]]]

b. [John$_i$ should be easy for [his$_i$ wife] [NO$_i$ [PRO to love e$_i$]]]

(Lasnik & Stowell 1991: ex. 33 a, 28a)

In (112a, b) the pronoun *his* cannot be bound by the wh-phrase *who* or the phrase *no man*. By contrast, *John* can bind *his* in (113a, b). While all structures in (112-113) instantiate A-bar movement, only Wh-movement and QR induce WCO effects. Topicalisation (113a) and Tough Movement (113b) allow binding.

Lasnik & Stowell (1991) propose that WCO arises only in the presence of a *True Quantifier*, which is defined as follows (QP stands for Quantifier Phrase):

> '… a true QP is composed of a quantifier Q and a nominal term T defining a range R that Q quantifies over,_such that R is a possibly nonsingleton set .For instance, in the true QP which man, Q is which, T is man and R is a set of two or more men…'

The wh-phrase in (112a) and the quantifier in (112b) are True Quantifiers and, therefore, give rise to WCO. The ungrammaticality of co-indexing in (112) is a consequence of the following principles:

I. In a configuration where a pronoun P and a trace T are both bound by a quantifier Q, T must c-command P.

II. There is a bijective correspondence between variables and A-bar positions (i.e. each operator must A-bar bind exactly one variable and each variable must be A-bar bound by exactly one operator).

They also assume Chomsky's definition of a variable:

III. A is a variable iff a is locally A-bar bound and in an A-position.

Note that (III) makes no distinction between empty categories and pronouns. So, in (112) both the pronoun and the trace qualify as variables, as they appear in A-positions. As the trace does not c-command the pronoun, co-indexing cannot be licensed by I. Further, the Q cannot bind both the trace and the pronoun because this would violate II. Thus, the only grammatical structure for (112) is one in which the Q binds the empty category and the pronoun is locally free.

By contrast, no Q is present in (113). For these cases Lasnik & Stowell assume a Null Operator ('NO' in (103a, b)) which is of referential nature. Unlike the wh-

phrase or the QP in (112) the NP John in (113) has specific reference, the individual *John*. In (113a) the trace of the null operator, e_i, is c-commanded by a constituent containing a co-indexed pronoun, *his$_i$ mother*. This is a WCO configuration; however, there is no WCO effect. In the absence of a Q, none of the principles of the grammar blocks co-indexing between *John*, *his* and *e*.

Lasnik & Stowell discuss the presence of WCO effects in focus constructions from English:

(114) a His$_i$ mother [$_F$ **SHOT**] John$_i$
b *His$_i$ mother shot [$_F$ **JOHN**]$_i$
c His$_i$ mother bought [$_F$ a **PICTURE**] of John$_i$
(Lasnik & Stowell 1991: ex. 82a-c)

They note the following: 'From the perspective of our theory 82b (114b here) is surprising… the focused NP does not seem to be a true Quantifier' [p.716].

Indeed the following examples from Greek in (115) show that the status of focus as a true Quantifier ranging over a *non-singleton set* is questionable:

(115) a. Pulisa [$_F$ to **AUTOKINITO MU**]
sold-1sg the car-acc my-gen
'I sold my car'
b. Pulisa [$_F$ **PENDE PINAKES**]
sold-1sg five paintings-acc
'I sold five paintings'
c. Akousa [$_F$ ti **MARIA**]/ [$_F$ tis **IDISIS**]
heard-1sg the Mary / the news-acc
'I heard Mary/the news'

In (115a-c) all the focused constituents have specific reference, identifying individual referents. There is no non-singleton set involved in these focus structures. The same is true for Italian as the following examples show. According to Rizzi (1997), *il tuo libro* in (116a) is a contrastive focus, whereas in (116b) it is a topic:

(116) a. [$_F$ il **TUO** libro] ho letto (non il suo)
the your book have-1sg read (not the yours)

'Yours book I read (not his).'

b. Il tuo libro, lo ho letto
the your book cl have-1sg read
'Yours book, I read it.'

As it is obvious in the examples above *il tuo libro* is a definite NP with specific reference. The only interpretation available for example (116a) is the one the speaker assumes that the hearer has only one book. The same can be assumed for the previous Greek examples in (115). The crucial point is that it is not clear at all how focus and the movement operation of focus can be characterised as quantificational in nature. There is not a *non-singleton set* involved in this interpretation; the truth is that in both examples in (116) the NP *il tuo libro* has the same non-quantificational properties. This concludes to the assumption that focused XPs are not in principle different from topicalized XPs since both can be non-quantificational.

Outwitting the above issue, Lasnik & Stowell (1991) propose that the focused NP contains a covert operator such as *only*, available at LF, 'which carries the semantic import of focusing' attempting to maintain the quantificational status of the focus operator. However, as Alexopoulou (1999) points out this solution is not ideal, if we consider the following case from Greek involving a partitive structure:

(117) A: pjus apo tus sinadeldus kalese o Janis?
Which-of the colleagues-acc invited-3sg the John-nom
'Which of the colleagues did John invite?'
B: kalese ti [$_{F}$ **SOFIA**] alla den tu apandise akoma
invited-3sg the Sofia-acc but not cl-gen replied-3pl yet
'He sent (an invitation) to the Sofia but they have not replied yet'

Alexopoulou (1999) points out that in question (117A), the number of the wh-phrase is plural. Thus, A's question infers that the person to which the question is addressed knows that *John* must have invited more than one person. Nevertheless, the answer given by (117B) is a grammatical answer which does not have to presuppose that *Sofia* was the only colleague that John invited. This presumably means that B's answer has some particular reason to communicate or emphasise specifically that John invited *Sofia* or

make a contrast with the remaining guests. This is another argument that the quantificational status of focus here is very difficult to maintain.

It could well be the case that the quantificational import of the contrastive focus above lies in the set of alternatives associated with it: the p-set (suggested by Samek-Lodovici (p. c)). In semantic theories of information structure, the surface structure of a sentence like (118) receives a syntactic representation in terms of constituents and an informational representation, which is a partition into background and focus.[74] The background corresponds to a semantic structure, the p-skeleton (von Heusinger 1999), following Jackendoff's (1972) presuppositional skeleton. The p-skeleton is formed by substituting the focused expressions by appropriate variables.

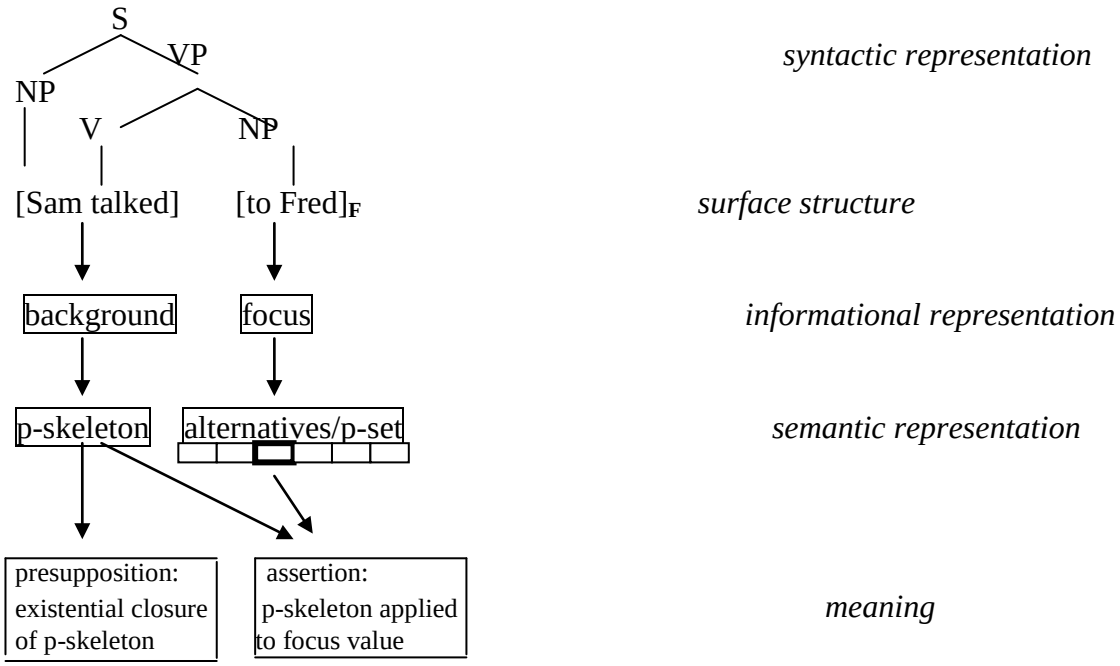
(118) Sam talked to [$_{\mathbf{F}}$ **FRED**]

The contrastively focused element *Fred* induces or evokes alternatives. The value of the focus, i.e., the semantic denotation of the focused expression, is part of the set of alternatives, which are sometimes called *p-set*. The p-skeleton, the set of alternatives, and the value of the focus combine to form the assertion and the presupposition of the sentence. The presupposition is formed by existential closure, i.e., by existential quantification over the free variables that had been substituted for the focused

[74] Works that deal with focus and other discourse roles from a semantic perspective include Szabolcsi (1981), Jacobs (1983), von Stechov (1990), Krifka (1991), Diesing (1992), Rooth (1992), Schwarzschild (1999), Büring (1997, 2003). There are at least three theoretical variants of the semantic-based approach to Information structure: the *semantic-syntax view*, the *semantic-phonology view*, and the *semantic-based view*. The semantic-syntax view has its historical roots in the focus projection concept of Höhle (1982) and Selkirk (1984, 1995). This concept models the distribution of accents by allowing pitch accents to mark more than just the accented constituent as focus. While the principle of focus projection makes use of syntactic concepts – e.g., head, internal argument, and adjunct (Gussenhoven 1983), the actual conditions on accenting relate prosody via syntax to semantics. Many arguments against the strict syntactic approach to focus have been made based on this moderate view (Gussenhoven 1999). In recent years even the role of syntactic focus marking has been debated and the semantic-phonology view has become a research topic. This approach goes back to ideas about the notions of givenness (Halliday 1967) and highlighting (Bolinger 1972). For example, Schwarzschild (1999) proposes a system in which accent placement is directly mediated by interpretive principles, thereby explaining the effects of focus. While Schwarzschild's approach still employs focus marking, Büring (2006) proposes doing away with it completely. Finally, the pure semantic view, which concentrates on the sentence-internal and -external functions of focus and topic constituents, the effects of focus on semantics can be said to be the introduction of a set of alternatives that contrasts with the ordinary semantic meaning of a sentence can be subdivided into the *Structured Meaning Approach* (Jacobs 1982, 1983, 1984, von Stechow 1991, Krifka 2006), the *Alternative Semantics Approach* (Rooth 1992). Semantic theories of Information structure are built mainly on the analysis of focus sensitive particles, such as *only, even, also, too* and adverbs like *always, sometimes*, etc.

expression. Applying the value of p-skeleton to the focus value yields the assertion, as illustrated in the diagram (119), which refers to sentence (118).

(119) **InfoSructure and Focus-Semantics**[75]



In discussing contrastiveness, Chafe (1976) makes some interesting remarks on the semantics of contrastive focus, which he distinguishes from information focus expressed by the contrast of given-new. The contrastive focus on *Ronald* in sentence (120) conveys 'the speaker's knowledge that Ronald, as opposed to other possible candidates the addressee might have had in mind, is the right selection for this role' (Chafe 1976, 33). Chafe lists three factors that are involved in the interpretation of this sentence: (i) the shared assumption that someone made the hamburgers; (ii) a set of possible candidates, and (iii) the assertion of which candidate is the correct one.

(120) [$_{F}$ **RóNALD**] made the hamburgers.
(i) background: someone made the hamburgers
(ii) set of possible candidates: {Bill, John, Max, Ronald, Tom,...}
(iii) assertion: Ronald is the one who made the hamburgers

[75] Schema adapted from Klaus von Heusinger (1999).

Chafe's conception of contrastive focus is similar to Chomsky's description of information structure in terms of presupposition and focus. Hence, it might be the case that the quantificational status of contrastive focus is involved in the p-set of alternatives it evokes, which together with the focus value form the assertion and the presupposition of the sentence. This is an interesting point that requires further research.[76]

Moreover, Pesetsky (1987) discusses the notion of 'D-linking' in the context of investigation of the exceptional status of certain wh-phrases with respect to the Superiority Condition.[77] Consider the following example in English:

(121) Which students (??for example) did you invite?

In contrast to indefinite *wh*-pronouns, such as *who* or *what* (which can co-occur with *else*, as in *someone/something/who/what else*) or indefinite wh-phrases with *what* (cf. *what books*), *which* (**which else*) and all (non)-partitive phrases introduced by it are definite. The same is true for most (if not all) possessives. Like the more familiar type of definite descriptions, a definite *wh*-phrase is linked to a contextually salient set which determines the range of its felicitous answers.

[76] There is considerable disagreement concerning the correct analysis of contrastive focus in intonation languages. The central questions are the following: Does contrastive focus constitute an infostructural category of its own, independent of the more basic notion of focus as evoking a set of contextually salient alternatives (Rooth 1985, 1992)? And if so, are there any pragmatic and/or prosodic clues for its identification? Prosodic evidence from intonation languages suggests that contrastive focus is not fully independent of focus, as contrastive foci differ only gradually in intonation from information foci. In contrast, evidence from languages such as Hungarian or Finnish, in which 'contrastive' elements are realized in a particular syntactic position, suggests the opposite (É. Kiss 1998, Vallduví & Vilkuna 1998). This raises the question of what constitutes the set of characteristic semantic or pragmatic features of contrastive foci in these languages. A prominent line of research argues that contrastive foci are characterized on the basis of semantic features, such as exhaustiveness, and can therefore be diagnosed by looking at genuine semantic phenomena, such as the logical relations between sentence pairs (Szabolcsi 1981, É. Kiss 1998). However, Zimmerman (2007) argues that contrastivity is best approached as a discourse-pragmatic phenomenon with grammatical reflexes, perhaps exempting Hungarian: contrastivity in this sense means that a particular content or a particular speech act is unexpected for the hearer from the speaker's perspective.

[77] A discourse-linked interrogative phrase is an interrogative phrase like *which man* that implies the existence of a context set of familiar entities of the type denoted by the nominal (e.g., a set of already familiar men) (Pesetsky 1987, Enç 1991). They contrast with non-discourse linked interrogative pronouns such as *who*, which carry no necessary implication about familiar discourse entities. Superiority condition is a condition on the application of transformations, which states that, if a transformation can in principle be applied to two constituents in the structure, it has to be applied to the one that is superior. The formal definition (from Chomsky (1973)) is as follows: No rule can involve X, Y in the structure ... X ... [a... Z ... -W Y V ...] ... where the rule applies ambiguously to Z and Y and Z is superior to Y.

One possible type of answer to the wh-phrase in (122) is an enumeration of the subset of the contextually specified set of students for which (122) is true, as in (122a). But (122b) is also a possible answer to (122):

(122) Which student did you invite?
a. Jane, Jim, Fred and Harry
b. All the students who participated in my tutorial

An enumeration such as (122a) presupposes that the hearer is familiar with the members of the contextually given set individually. The fact that a functional answer (122b) is also felicitous and informative shows that a contextual requirement that speaker and hearer share knowledge of the individual members of the context set would be too strong (Pesetsky 1987:108). As Comorovski (1996: 191) shows, it suffices to assume that the speaker and hearer share 'some criterion according to which they exhaustively partition the set that *which* takes as an argument'. One such criterion of partition would be nationality.

(123) The [$_{F}$ **FINNISH**] students and the [$_{F}$ **POLISH**] students

The condition that speaker and hearer be able to partition a contextually salient set in the same way is exactly equivalent to the condition governing the use of sentences with contrastive focus-background structure. The only difference is that D-linked *wh*-phrases evoke a salient set of entities, whereas a sentence with a contrastive focus-background structure evokes a set of propositions. This means that D-linked *wh*-phrases must be analysed as the interrogative counterparts of (nominal) focus phrases in the sense of Drubig (1994).

This interpretation is supported further by an observation reported in Krifka (1998). Krifka shows that D-linked *wh*-phrases can only be answered by a focus phrase. One of Krifka's examples is the following:

(124) Q: Whose mother does Mary like the best?
A1: [$_{F}$ **JOHN'S** (mother)]
A2: *[$_{F}$**SUE**](assuming that Sue is John's mother)
A3: [$_{F}$ **JOHN**]

Krifka proposes distinguishing between *wh*-words and '*wh*-phrases' similar to the distinction proposed in Drubig (1994) between foci and focus phrases.

(125) Q: [Whose$_{wh}$ mother]$_{WhP}$ does Mary like the best?
A: [**JOHN$_F$**'s mother]$_{FP}$

Thus, wh-questions with D-linked wh-phrases show that the quantificational nature of focus (exhaustive quantifier) is best interpreted as an effect that arises when a certain focus structure is implemented in a question. This analysis explains the absence of the focus-sensitive operator reading.

Another problem with the quantificational character appears when considering scope effects. Kiss (1996, 1998) argues that focus-*in-situ* differs from constructions involving movement in that it is not quantificational. Kiss (1998) will be discussed in Chapter 3: 3.4). Let us now turn to the case of WCO.

2.6.5.1 Weakening the WCO argument: Cross-linguistic evidence

Recall that the idea behind WCO is preserving the generalisation that since focus induces WCO effects then it must be a quantifier whose syntactic realization is supported by the presence of WCO effects. The focus operator binds a variable in its scope, and, if coindexed with a pronoun not c-commanded by the variable it binds, it displays a WCO effect.

(126) * It was [$_F$ **TO A BOY**]$_i$ that his$_i$ mother spoke t_i

However, Drubig (2003) presents a number of evidence from West African and Nilotic languages which shows that the idea that WCO effects are a syntactic reflex for the quantificational-operator status of focus cannot be maintained in languages which have morphosyntactic focus markers. Akan (West Africa) has a type of contrastive focus construction which is based on a resumptive pronoun strategy. When the focused antecedent is [+human], the resumptive pronoun is *no* as in (127), when it is [-human], the pronoun is silent (128):

(127) a. Me húu baa no
I saw woman the
'I saw the woman'

b. **BAA$_I$ NO NA** me húu **no$_i$**
WOMAN the FM I saw her
'It was the woman I saw (her)'

(128) a. Me húu adaka no
I saw box the
'I saw the box'

b. **ADAKA$_I$ NO NA** me húu **[e$_i$]**
BOX THIS FM I saw it
'It was the box I saw (it)'

Furthermore, when a focus is embedded in a syntactic island, Akan shows the same pied piping effect as English. According to Drubig (1994) only the outermost island containing the focus can appear in the initial focus position. Consider (129):

(129) [Obárìmá no a sh ɛɛ esúrú atáadì **KOKKO** no ó]$_{DP}$ na Ama húu no
man the RM he-wore (up) cloth RED the SM FM Ama saw him
'[The man who wore the **RED** shirt] Ama saw (him)'

This pied piping effect is unexpected, since in Akan neither focus constructions nor focused wh-phrases are island-sensitive. Obviously, the device, which makes this type of island violation acceptable, is the resumptive pronoun.[78]

(130) **ADAKA$_I$ NO NA** wa min [$_{DP}$ onipa [$_{CP}$ a [$_{IP}$ me rehwehwɛ **e$_i$**]] no]
BOX THIS FM you know person RM (s)he is looking for (it) the
'This box you know the person who is looking for (it).'

[78] Moreover, the type of island violation that can be observed here appears to be quite common in languages with morphosyntactic focus marking systems. In Tuki, for example, *Wh*-fronting, Focus fronting and Relative fronting (as in Akan) all may violate island constraints. Biloa (1995, 37f) proposes base generation in an A-bar position; operators and pronouns form chains by means of pronominal binding. Resumptive pronouns in Tuki are silent, but have an optional realization with phonetic form if the antecedent is [+human]. The presence of the pronoun is evidence for the absence of WCO effects in both languages, which crucially confirms the assumption that wh-phrases, focus phrases and relative phrases cannot be analysed as operators binding variables, and thus resist an analysis in terms of A-bar movement.

Apart from focus constructions, there is other evidence that WCO is not the syntactic counterpart of quantification. This type of evidence comes from Wh-questions and Quantifier Raising in Greek. The presence of a clitic pronoun in (131-132) renders the structures grammatical (Alexopoulou 1999).

(131) a. Pjon$_i$ sinodepse o pateras tu$_j$/*$_i$?
Who-acc accompany3sg the father-nom his-gen
'*Who did his father accompany?'

b. Pjon$_i$ ton sinodepse o pateras tu$_i$?
Who-acc him-cl accompany3sg the father-nom his-gen
'Who did his (own) father accompany?'

(132) a. Kathe pedi$_i$ sinodepse o pateras tu$_j$/*$_I$
every child-nom accompany3sg the father-nom his-gen
'His father accompanied every child'

b. Kathe pedi$_i$ to sinodepse o pateras tu$_i$
every child-nom it-cl accompany3sg the father-nom his-gen
'His father accompanied every child/ Every child was accompanied by his father.'

Moreover, as argued in Alexiadou & Anagnostopoulou (1997c, 1999; henceforth A & A), the Greek counterpart of Germanic scrambling/object shift is clitic doubling[79]. The same is also true for Spanish and Romanian. The claim is that clitic chains are similar to scrambling chains in that they manifest the following -typical of A-movement- properties: (i) the repair or creation of Weak Crossover (WCO) effects, as in (133 and 134), (ii) the obviation of Principle C effects, as in (135) and (iii) compatibility with floating quantifiers, as in (136) (cf. Deprez 1994, Fanselow 1990, Mahajan 1991, Webelhuth 1993, Saito 1992 a.o).

(133) a. O Petros to$_i$ epestrepse [tu idioktiti tu$_i$]$_j$
the Peter-NOM Cl-ACC returned-3sg the owner-GEN his
[to kathe aftokinito]$_j$ xtes to vradi
the every car-ACC yesterday the night

[79]However, they are not exactly the same; scrambling can appear with quantificational phrases as well and have effects on scope interaction.

b. *O Petros epestrepse [tu idioktiti tu_i]
the Peter-NOM returned-3sg the owner-GEN his
[to kathe aftokinito]$_i$ xtes to vradi
the every car-ACC yesterday the night
'Peter returned his owner every car last night'

(134) a. o skilos tis_i tin akolouthise tin kathe gineka pandu
[the dog her]-NOM cl-ACC followed [the every woman]-ACC everywhere
b. *o skilos tis_i akolouthise tin kathe $gineka_i$ pandu
[the dog her]-NOM followed [the every woman]-ACC everywhere
"Her dog followed every woman everywhere"

(135) a. O Janis tis_i to_j epestrepse [to vivlio tis $Marias_i$]$_j$ simiomeno
the John Cl-Dat Cl-Acc gave back [the book of Maria]-ACC with notes
b.? O Janis tis_i epestrepse [to vivlio tis $Marias_i$] simiomeno
the John Cl-Dat gave back [the book of Maria]-ACC with notes
'John gave her back Maria's book full of notes'

(136) a. I Maria ta epestrepse ola ston idioktiti tus
the Maria-NOM cl-ACC gave back all to-the owner theirs
b. *I Maria epestrepse ola ston idioktiti tus
the Maria-NOM gave back all to-the owner theirs
'Maria returned all to their owners'

(examples from A&A 1997c)

Similar cases are attested in Italian by Cinque (1990) and Romanian by Dobrovie-Sorin (1990) who has argued that in Romanian the presence of an object clitic obviates WCO violations. By extension, the circumvention of WCO effects when a clitic is present is attributed to a vacuous satisfaction of the Bijection Principle (Koopman & Sportiche 1983): there is no variable at the foot of the chain headed by a non-quantificational wh, therefore there is no unwanted rivalry for the wh-operator with the subject-contained possessive pronoun, presumably on a variable reading of the latter. Interestingly, clitics exhibit remedial properties even when they double DPs, unlike wh-phrases which can never head a chain with a variable, so that the syntactic [+/-quantification] variation loses relevance:

(137) a. Mama luu_i li iub te pe lon_i (clitic→ no WCO)
mother his him-CL loves PE lon
'His mother loves John'

b. Pictorul $ei_{j/*i}$ a distrus $pictura_i$ (no clitic → WCO)
painter its has destroyed picture
'Its painter destroyed the picture'

In addition, according to A&A (1997c, 1999) both clitic doubling and scrambling/object shift provide evidence for the connection between the syntax and the interpretation of the NPs. Both are optional operations, which are sensitive to the semantic and the discourse properties of the NPs. They are both subject to several restrictions pertaining to the referential nature of the NPs and their definiteness. For example, doubling and object shift in Greek and Icelandic respectively are restricted to definite DPs only, whereas structures with indefinites are ungrammatical. Furthermore, scrambling/object shift is associated with strong/specific interpretation of NPs (cf. Adger 1993; Abraham 1995; Delfitto & Corver 1995; Diesing 1992; de Hoop 1992; Meinunger 1995 among others). In Dutch, scrambling triggers referential, partitive and generic readings on weak NPs (cf. de Hoop 1992). Once again scrambling shows similar effects. It is associated with specificity in Romanian (cf. Dobrovie-Sorin 1990) and with partitiviness in Porteño Spanish (cf. Suner 1988). In Greek, doubling of definite NPs makes them strictly anaphoric to previously established discourse referents (i.e. the NPs cannot undergo 'accommodation', cf. Anagnostopoulou 1994 following Heim 1982). Once again the same is true for scrambling (cf. Delfitto & Corver 1995).

(138) a. O Janis diavase [ena vivlio gia ton Arthur $Miller_i$], enthousiastike
John read a book about Arthur Miller he got very enthusiastic
ke thelise na gnorisi to $sygrafea_j$ apo konda
and he wanted to get to know the author

b. O Janis diavase [ena vivlio gia ton Arthur $Miller_i$], enthousiastike
John read a book about Arthur Miller he got very enthusiastic
ke thelise na ton_j gnorisi ton $sygrafea_j$ apo konda
and he wanted to get to know the author

(examples from Anangnostopoulou 1994 and Alexiadou 1998)

The Intonational effects of clitic doubling are also relevant here. The main observation by A&A (1997c, 1999) is that scrambled and doubled NPs are de-stressed. De Hoop (1992) observes that object scrambling yields the same effects as the contrastive predicates with stressed verbs in English. Whether an NP can scramble or not depends on the contrastiveness of the predicate. Verbs like *have* cannot bear contrastive stress and the NP *a cat* cannot scramble.

(139) a. because I a cat always have
b. *because I always [$_F$ **HAVE**] a cat

The same effect holds for scrambling. Backward pronominalization in English is licensed only when the verb carries main stress, not when the NP carries the main stress (cf. Williams 1994 for a recent discussion). Thus, the alleged WCO effects found with *in-situ* focalization can be easily attributed to different stress requirements rather than quantificational operator chains.

(140) a. *His father loves [$_F$ **ALEX**]
b. His father [$_F$ **LOVES**] Alex

Similarly, in Greek, doubling of the direct object makes co-reference possible. Thus, doubling is a way to achieve destressing of the object, similarly to scrambling in Germanic and anaphoric destressing in English.[80]

(141). a. *O skilos tu$_i$ akoluthi to Jani$_i$ pandu
the dog - his follows the John-ACC everywhere
b. O skilos tu$_i$ ton akoluthi to Jani$_i$ pandu
the dog - his cl-ACC follows the John-ACC everywhere
'His dog follows John everywhere'

To conclude, the absence of WCO in the examples above in Greek and Romanian creates reservations for the association of WCO with quantification and furthermore the

[80] Scrambling and doubling display striking similarities in Experiencer Object contexts and Double Object constructions.

distinction between quantificational and anaphoric A-bar movement based on this association; The presence of WCO in focus structures is not an exact guarantee that focus is quantificational and cannot maintain the differences between Topicalization and focus movement from this distinction. For the time being the question remains open. My view is that the difference between the two discourse functions with respect to WCO effects should be directly accounted for by an analysis which supports the view that discourse functions are represented at a level distinct and independent of Phrase structure configurations (in line with Vallduví 1992).[81]

The above evidence from cliticization point towards an alternative analysis of WCO, whereby WCO is considered a discourse phenomenon as exemplified in Szendröi (2005).[82] The fact that doubling obviates WCO has to do with the interpretation of clitic-doubled NPs as ground information – also supported by A & A's (1997c, 1998) arguments. On the other hand, focus is related with new information. In a felicitous discourse, the focused constituent denoting new information should not be mentioned in a salient way in the previous discourse. In this respect, when something supposedly given is brought into focus, discourse incoherence arises, as illustrated in (142):

(142) O Nikos ke i Eleni malosan sto party. *Meta o [$_{\mathbf{F}}$ **NIKOS**] milise stin Eleni
'Nikos and the Eleni fought at the party. Then Nikos talked to Eleni'

[81] Alexopoulou (1997) offers an account for unbounded dependencies where WCO is viewed as a discourse driven phenomenon. WCO in wh-questions and sentences with quantified DPs is the result of the interaction between information packaging and the cognitive status of wh-phrases and quantifiers rather than a distinct property of quantification. In her approach the diversity of the wco facts receives a unified treatment.

[82] Szendrői (2005) offers additional arguments against a wco analysis of focus. Her argumentation is based initially on Williams (1997) who states that a weak crossover account is too restrictive because it incorrectly predicts that cases of 'backward-and-down' anaphora like (1) are ungrammatical. This is due to the fact that the LF representation of (1) incorrectly induces a weak crossover violation.

(1) Anyone who has written it_i can turn his TERM $PAPER_i$ in to me.
LF: his TERM $PAPER_i$ [anyone who has written it_i can turn t_i in to me].
(Williams 1997: Ex. 33a)

She further argues that what allegedly looks like a wco violation is in essence a discourse-violation. Based on Rochemont's (1986) notion of c-construability, according to which any constituent is focus if and only if it is not c-construable from the earlier discourse, she argues that, utterances, such as (2) are ungrammatical because the focus element, John has just been introduced to the discourse in the previous utterance in a salient way.

(2) John and Mary danced on the floor. *Then JOHN kissed Mary.

It seems that the ungrammaticality of (142) is due to an ill-formed Focus. Similarly, Szendröi (2005) claims that the alleged WCO violation in (143b) is a discourse paradox; the focus on Mary is ill-formed.

(143) a. The man that she$_i$ met [$_F$ **LIKED**] Mary$_i$.

b. *The man that she$_i$ met liked [$_F$ **MARY**]$_i$.

LF: Mary$_i$ [the man that she$_i$ met liked t$_i$]

She argues that *Mary,* the focused element, cannot be linked to an entity mentioned in previous discourse. On the other hand, the pronoun *she* needs to be linked to an accessible entity in the discourse. If the previous discourse contains an accessible entity as the antecedent of the pronoun, then the presence of this discourse entity cannot allow focus on *Mary*, as this would be a violation of Rochemont's (1986) c-construability. If there is no discourse antecedent for the pronoun and there is no earlier mention of *Mary* in the discourse, then focus on *Mary* is permitted. She further presents some counterexamples of backward anaphora, where the antecedent of the pronoun is not part of the previous discourse but is rather found in the same utterance with the pronoun (cf. footnote 81).

Szendrői (2005) presents additional evidence arguing that example (143b) is grammatical in certain discourse contexts which proves the point of a discourse-violation. In Rochemont's (1986) account, a discourse-given entity cannot bear prosodic prominence. However, contrastively focused constituents may carry focus-prominence even if they are not new in the discourse.

(144) A: Sally and the woman John loves are leaving the country today.

B: I thought that the woman he loves has [$_F$ **BETRAYED**] Sally.

A: No, the woman he$_i$ loves betrayed [$_F$ **JOHN**]$_i$.

(Rochemont 1986)

The last utterance where *John* is contrastively focused is interesting; it does not violate Rochemont's c-construability, and coreference between *John* and *he*, is allowed (although it is not new in discourse, it provides a correction of B's utterance

and is contrasted with *Sally*). This is problematic for a WCO account. If the example was ungrammatical due to a WCO violation, then we would have to assume that focus movement does not involve contrastively focused constituents but only constituents which carry new information focus. As it has already been shown, this is not the case.

To conclude, what looks like a WCO violation is actually a discourse violation relevant to the partition of the sentence into given and focus information. Thus, evidence on WCO calls for an alternative view, namely, that the syntax of focus should be independent from the discourse function of focus involved.

2.6.7 Focus Projections and the absence of Phonology

Cartographic approaches to focus movement face additional problems. It is widely-known that information focus in languages such as English is linked to the information contour of the sentence and is therefore applicable to the sentence final or most embedded constituent by default. In fact, Chomsky (1971) arrived at the following statement:

… an apparent alternative would be to determine focus and presupposition in terms of surface structure: the focus is the phrase containing the intonation center, and the presupposition is determined by the replacement of the focus by a variable … (Chomsky 1971: 200). Consider Chomsky's sentence in (145):

(145) Was he warned to look out for [an ex-convict with a red shirt]?

SHIRT
RED SHIRT
A RED SHIRT
WITH A RED SHIRT
EX-CONVICT WITH A RED SHIRT
AN EX-CONVICT WITH A RED SHIRT

All of the capitalized constituents are possible focuses. Nevertheless, as noted by Newmeyer (2004) they are not all phrasal constituents potentially hosted by maximal projections. For example, the noun *shirt***,** head of the NP *a red shirt*, is something less than a full phrase (*sic).* Newmeyer (2004) notes: 'unless one were to take the position

that all constituents on right branches are maximal projections, the movement of *shirt* to SpecFP violates constraints on movement going back to Emonds' Structure Preserving Constraint (Emonds 1976)'.

Moreover, these structures in (146) create an apparent mismatch for the S-IS mapping (cf. Chapter 1, section 1.2.1). Accent placement on shirt gives rise to broad focus domains. It is not clear how a syntactic analysis of focus can account for the fact that accent on the rightmost constituent can induce different focus domains. This is because the contribution of phonology is absent from syntactic accounts.

Focus movement becomes even more problematic, given that Rizzi and others assume that contrastive focus can be treated similarly. The problem is that constrastive focus not only does not have to be phrasal projection but it also does not have to be on the right side of the sentence. The following examples from Ladd (1980:81) and Lambrecht (1994) illustrate this point:

(146) Q: Has John read *Slaughterhouse-Five*?
A: No, John doesn't **READ** books.

(147) Mary is **THE** boss.

Also, note that contrastive focus can be formally discontinuous (Jacobs 1984, 1988, 1992; Krifka 1991; Rooth 1985; von Stechow 1989), emphasizing the fact that contrastive focus does not necessarily form continuous patterns found in information focus:

(147) Q: Did Mary wash the car?
A: No, **TOM** washed the WINDOWS.

It is therefore unclear how a Rizzian approach to movement can accommodate the semantic representation of such cases. It was also noted that in Greek as well as in English contrastive focus can be on a prefix where only part of a word is contrasted. The famous example from Chomsky (1971) confirms it:

(148) John is more concerned with **AFF**irmation than with **CON**firmation.

(149) A: O Janis-nom anakalipse to mystiko.
John-nom discover-3sg-PS the secret-acc
'John discovered the secret'
B: **ANA**kalipse i **APO**kalipse?
discover-3sg/PS or uncover-3sg/PS?
'Did he DIScover or UNcover (the secret)?

It is not clear how a prefix could occupy [Spec, FP]. It is difficult for a theory based on functional projections to explain how focus is licensed on prefixes, where only part of a word is contrasted. It is unclear what movement operation would license a legitimate configuration within word-boundaries excluding the rest of the word. In other words, the idea of moving focus to the left periphery creates more problems than it solves[83].

(150) A: Tha agoraso ena [$_{\mathbf{F}}$ **BLE**] autokinito
will buy-1sg one blue car-acc
'I will buy a **blue** car.
B: ena [$_{\mathbf{F}}$ **BLE**] i ena [$_{\mathbf{F}}$ **MAVRO**]?
a **blue** (car) or a **black** (car)?

In order to explain the occurrence of focus in B's utterance, one has to assume that the functional projection responsible for focus-assignment at the sentence level plays some role at the DP level. That is, one has to assume that the category that assigns focus to a constituent of the sentence, whatever its nature is, also has to occur inside DP. Although there are theories suggesting that the same array of (extended) functional projections

On a more conceptual level, it remains unexplained under a syntax-based approach why there is a correlation between functional projections and focus. Focus is a grammatical feature as any other with the difference that it cannot be inherent to lexical items. Though attractive as far as it explores the similarities between focus and other grammatical configurations, is not very clear why focus should be compared with nominative case as in Horvath (1986). There is a crucial difference between these two types of features: nominative case is always assigned every time a certain syntactic configuration is met. Hence, it is a purely structural relation, whose existence depends on a set of syntactic requirements. By contrast, focus is a basically discourse-related relation. It must be marked in the structure, but it is not the case that every time a certain configuration is created, focus will appear. That is, there is a difference in terms of predictability that should be taken into account when proposing to derive focus from a given syntactic configuration.

identifiable for VPs is present at the DP level (Kayne 1994), it seems quite difficult to explain the distribution of focus in the same terms.

2.7 Concluding Remarks

In this chapter, I examined the syntactic encoding of focus and I proposed that evidence from Greek and other languages suggests an approach where the pragmatic structuring of the utterance is independent from the syntax and semantics of discourse functions. With respect to Greek, I presented evidence supporting the view that focus interpretation in Greek cannot be read off directly syntactic structure. The S-IS mapping in the language underdetermines focus interpretation in a one-to-many and many-to-one fashion. In this respect, I suggested that the properties of the S-IS mapping appear to be incompatible with a left-peripheral encoding of focus interpretation in Greek, à la Rizzi (1997). Most probably, the Greek left periphery does not necessarily implicate a specialized, cartographically encoded focus position, in the sense that focus movement is not necessary to achieve focus interpretation.

After discussing the Greek word order facts, I looked in more detail at the internal structure of the left periphery, more specifically at the question of recursion and the operator properties of discourse elements (section 5). In section 6, I provided a critical discussion of the above properties: I showed that syntactic properties such as recursiveness and subjacency are independent of the partition of the sentence into new-given information. In particular, in section 2.6.1, I argued that information structure is not organised in a recursive way as syntax is. In section 2.6.2, I discussed the notion of subjacency and I show that subjacency is also independent of the partition of the sentence into new-given information. In section 2.6.3, I argued that semantic focus in Greek cannot affect the truth conditions associated with the sentence in NS. In section 2.6.4, I argued that ordering restrictions of left peripheral elements can be independent from the articulation of information structure constraints. In section 2.6.5, I provided evidence against the quantificational operator properties of focus showing that WCO should be rather treated as a discourse phenomenon. Finally, in sections 2.6.6 and 2.6.7, I showed that the cartographic approach cannot explain broad focus structures, and cannot account for the interaction between information structure and phonology.

CHAPTER 3: FOCUSING STRATEGIES AND THE SEMANTIC COMPONENT

3.1 Preliminary Remarks and Puzzles

As shown in Chapter 2, the evident syntactic displacement effects found in a given language and the interdependence of these effects with information structure provide cartographic approaches of the left periphery with justification in postulating a designated projection dedicated to the discourse function of focus. When the language does not offer any language-internal evidence for the existence of such projection, e.g. focus markers, particles, stress location, etc, the movement finds further justification through its association with a special interpretational effect. The question that arises though, is what happens when such an effect is missing, namely, a certain interpretation is not uniquely identified in a single position in the left periphery? Or to put it in different words, when this effect is shared by optional variants? Recall the following examples from Chapter 1, where the focused constituent is found in both – preverbal and postverbal – positions, with no difference in the interpretation.

(1) **SUBJECT FOCUS**

Pjos ekopse ta dendra;

Who cut the trees?

b. [$_{\mathbf{F}}$ i **GEITONES**] ekopsan ta dendra **S**VO

the neighbours-nom cut-3pl/PS the trees-acc

'The neighbours cut the trees'

c. ta dendra (ta) ekopsan [$_{\mathbf{F}}$ i **GEITONES**] OV**S**

the trees-acc them-cl cut-3pl/PS the neighbours-nom

'The neighbours cut the trees'

(2) **OBJECT FOCUS**

Ti ekopsan i geitones?

What did the neighbours cut?

d. i geitones ekopsan [$_{F}$ ta **DENDRA**] SV**O**

the neighbours-nom cut-3pl/PS the trees-acc

'The neighbours cut the trees'

e. [$_{F}$ ta **DENDRA**] ekopsan i geitones **O**VS

the trees-acc cut-3pl/PS the neighbours-nom

'The neighbours cut the trees'

Based on examples such as the above in Chapter 2 (section 2.4.1), I showed that the mapping from syntax to information structure is strikingly flexible and underdetermines focus interpretation in an indirect way. I showed that a single interpretive effect can be realized by multiple word orders. There is actually no structural—at least—limitations to the position that a focus-reading is realized within a clause. In this Chapter, I examine the semantic manifestations of focus and I provide further concrete evidence to argue that from an interpretive point of view there is no logical correspondence - no systematic correlation - between syntactic position and semantic interpretation in Greek (contra Kiss 1998). In effect, I argue that semantic focus types, such as exhaustivity, contrast, and new-information are not syntactically encoded in Greek and that interpretive 'choices' are forced by pragmatic-discourse considerations.

An important consequence of this claim is that it further empirically substantiates the S-IS underdeterminacy hypothesis suggested in Chapters 1 and 2 and more importantly it further supports the overall proposal of this thesis that the encoding of focus interpretation in Greek cannot involve a strict cartographic outlook. Recall that cartography adopts a radically decompositional approach, in the sense that, if there are two interpretive effects, there must be two designated positions in which these are licensed, i.e. exhaustivity is realized in *ex-situ* position, whereas information-focus is realized *in-situ* (in a number of languages). In effect, the cartography of the left periphery automatically loses empirical motivation when faced with the interpretive mismatch in (1) and (2).

The aforementioned consequence has an important implication for the analysis of focus in Greek from a semantic standpoint. Showing that there are no interpretive

restrictions in the syntactic encoding of focus (in the sense that semantic focus types are not syntactically encoded) enables me to offer a uniform analysis: a unification focus positions across the sentence in the semantic component. (cf. also Brunetti 2003 for Italian). In particular, I argue, following the Alternative Semantics approach (Rooth 1985, 1992), that focus is always contrastive in that it is linked to a variable that evokes alternatives in discourse. I further argue that, both in a contrastive and in a non-contrastive context, focus, - as realized in different positions allowed by the grammar-, always expresses new or non-presupposed information. In semantic terms, focus always identifies a referent for a variable. Any interpretive effect that is not strictly related to this property - such as contrast - is not a matter of focus, but it is the result of the discourse context in which focus occurs.

The above argumentation brings us to the following important question: provided that the grammar allows for optional focusing strategies (optional variants) and that interpretive choices among focus structures are determined by discourse considerations, how can the different (optional) strategies involved in the languages -*ex-situ* and *in-situ*- be justified in terms of 'interface economy' (Chomsky 2000, 2001, 2005; Reinhart 2006). In other words, if it is true that the same information structure partitioning can be achieved through more than one word orders in Greek, how can this pattern be justified in terms of economy? And if the *in-situ* option is available, why focus dislocation occurs? Is movement optional? And if yes, why is it optional? Does this optionality serve an interface need? I will address these questions in sections 5-8. I argue following Neeleman & van de Koot (2008) that focus movement is optional in Greek because it does not serve focus per; it is an 'altruistic' operation that basically facilitates a transparent mapping between syntactic constituents and constituent of Information structure (at the C-I interface).

The remaining sections are organised in two parts: In the first part, in section 2, I consider a range of semantic conceptualisations of focus prevailing in the literature. I also review É Kiss's (1998) account of focus in Hungarian and English, which provides a methodology for distinguishing semantic focus types. In section 3, I examine the different functions of focus and provide an alternative semantic account to Kiss's (1998), the Alternative Semantics (Rooth 1985, 1992) as the semantic theory adopted in the present thesis. In section 4, I apply Kiss' methodology to Greek, in order to determine whether there is a logical correspondence between semantic interpretation and syntactic position in the grammar, or whether it is independent of

the syntax and rather determined by discourse-pragmatic factors. In the second part, I I touch upon the issues of economy and optionality. In section 5, I present a cross-linguistic survey of the strategies of focus encoding, and provide a discussion of optionality and economy. In section 6, I offer a tentative proposal on the issue of optionality based on notions of 'costly operations' and 'complexity', showing that languages always ensure economy by *not* permitting two (or more) focus-equivalent constructions, since one will always be less economical than the other. However, in section 7, I re-evaluate optionality and economy in light of Horvath's (2009) 'Strong Modulariy Hypothesis of Discourse Features' and the interface-based account of 'discourse templates' by Neeleman & van de Koot (2008) and I bring forward the view that optionality is permitted if movement does not serve focus per se but it rather facilitates a transparent mapping between syntactic constituents and constituents of Information structure. In section 8, I attempt to assess the predictions of interface-based accounts (section 7) that economy can be further ensured if we preserve the autonomy of the computational system from the other components of the grammar, in the light of current Minimalist assumptions. Section 9 conludes the chapter.

3.2 Semantic manifestations of Focus

This section reviews the basic semantic types of focus born out in the literature and their main distribution.[84] The linguistic literature systematically distinguishes between at least the following main pairs of focus types: *broad* and *narrow* focus, *neutral* and *contrastive* focus and more recently, *information* and *exhaustive listing or identificational* focus.

The terms broad and narrow focus were introduced in Ladd (1980). This distinction is based on the scope of focus. Broad vs. narrow focus distinguishes between circumstances in which a *focus-center* [85] corresponds to focus on a larger or broad constituent vs. those in which it corresponds to focus on a smaller or narrow constituent. Consider two constructed examples that Ladd provides:

[84] The picture that emerges shows that focus is a multidimensional concept characterized by the interrelatedness of syntax, argument structure, formal semantics, intonation and pragmatics.
[85] A focus center is an accented word in an utterance that signals focus on a constituent containing it. This is similar in concept to the term "focus exponent" used by Höhle 1982.

(3) a. What did John do yesterday?

b. He [$_{\mathbf{F}}$ painted the **SHED**].

(4) a. John painted the garage yesterday, didn't he?

b. He painted [$_{\mathbf{F}}$ the **SHED**].

The appearance of the focus-center *shed* can represent either broad focus on the verb phrase, as in (3b), or narrow focus on the noun phrase, as in (4b). According to the above scope-based view, there is a focus *spectrum* rather than clearly distinguished semantic types. Indeed, in Ladd's view, *contrastive stress*, for example, is nothing more than accent placement that signals narrow focus, and narrow focus can be used for things other than explicit contrast (Ladd 1980:79, cited in Rochemont 1986). What is suggested in Ladd's analysis is that, according to some views, the semantic focus type is determined by accent placement, where broad focus corresponds to new information, and narrow focus to identificational or contrastive focus.[86]

Other writers have observed similar distinctions, but have discussed them in different terms. What Ladd (1980) called broad focus others have identified as neutral (sentence) stress (Chomsky and Halle 1968, Jackendoff 1972), neutral focus (in Sgall et al 1986), and more recently, information focus (in É. Kiss 1998);

The distinctioin between new information (or presentational focus) and exhaustive listing or identificational focus (which subsumes contrastive focus) has been quite important and widely used in contemporary literature. New information focus (5B) simply introduces a new constituent into the discourse, and this term arises from traditional views wherein the role of focus is to mark or distinguish new information from old:[87]

(5) A: Who did you see in the market?

B: I saw [$_{\mathbf{F}}$ **JOHN**]

[86] See Rochemont (1986) for further discussion and arguments against this view, for example, the fact that the broadest assignment of focus, that is, sentence focus, can still allow a contrastive interpretation.

[87] This is the view of focus in discourse –oriented approaches. Many authors are interested in the coherence of discourse and the role that focus — as reflected by intonation — plays in it (e.g., Halliday 1967, Sgall et al.1986, Chafe 1976, Prince 1981a, Sperber and Wilson 1986, Lambrecht 1994). They have argued that focus represents that "which is represented by the speaker as being new, textually (and situationally) non-derivable" (Halliday 1967).

Exhaustive listing, a term originally introduced by Kuno (1972), and developed by Szabolcsi (1981), specifies an exhaustive set of which the proposition holds true, and excludes other possibilities. The Hungarian preverbal focus expresses exhaustive identification. Szabolcsi (1981) describes its meaning with the formula illustrated in (6b):

(6) a. [$_{F}$ **PÉTER**] aludt a padlón.
Peter slept the floor-on
'It was Peter who slept on the floor.'
b. 'for every x, x slept on the floor iff x = Péter'

The universal quantifier in (6b) is to be interpreted on a relevant set. Evidence of the [+exhaustive] feature of focus is provided by the fact that (6a) and (7a) cannot be simultaneously true, i.e., (6a) is not a consequence of (7a) but contradicts it. It is the negation of (6a) that can be coordinated with (7a), as shown in (7b):

(7) a. [$_{F}$ **PÉTER ÉS PÁL**] aludt a padlón.
Peter and Paul slept the floor-on
'It was Peter and Paul who slept on the floor.'
b. Nem [$_{F}$ **PÉTER**] aludt a padlón, hanem [$_{F}$ **PÉTER ÉS PÁL**] (aludt a padlón).
'It wasn't Peter who slept on the floor but it was Peter and Paul.

In É. Kiss (1998) it is claimed that the preverbal focus represents the value of a focus operator, operating on a set of alternatives for which the predicate can potentially hold, exhaustively identifying the subset for which the predicate actually hold. Thus, exhaustive listing focus specifies an exhaustive set of which the proposition holds true, and excludes other possibilities, as in (8):[88]

(8) John gave the [$_{F}$ **FLOWERS**] only (and nothing else) to his fiancé.

[88] This is consistent with Kuno's (1972) and Szabolcsi (1981)'s view, although Cohan (2000) notes that exhaustivity is not always overtly marked by *only*-phrases, as in example (8).

The notion of exhaustive listing is also equated in the literature with identificational focus according to É. Kiss (1998). In particular, according to É. Kiss's (1998) definition 'an identificational focus represents a subset of the set of contextually or situationally given elements for which the predicate phrase can potentially hold; it is identified as the exhaustive subset of this set for which the predicate phrase actually holds' (p. 245). In effect, exhaustive listing focus involves 'information which the speaker asserts is unique in the sense that the rest of the sentence is true only with respect to it, and false with respect to all other units of information which could be appropriately situated for it in the sentence'.

É. Kiss argues that the prototypical realization of identificational focus in English is *it*-clefts, (although it can also be signalled by the presence of a focus operator like only)

(9) It was (only) [$_{\mathbf{F}}$ **JOHN**] that Mary invited to her birthday party.

Similarly to the aforementioned authors, É. Kiss (1998) also acknowledges the existence of different focus types and makes a clear distinction between identificational and information focus. While identificational focus expresses exhaustiveness (10a), information focus does not, expressing instead only the non-presupposed status of the focused material (10b).[89]

(10) a. Tegnap este [$_{\mathbf{F}}$ **MARINAK**] mutattam be Pérert
Last night Mary-dat introduced I.perf Peter-acc
'It was TO MARY that I introduced Peter last night'

b. Tegnap este be mutattam Pétert [$_{\mathbf{F}}$ **MARINAK**]
'Last night I introduced Peter TO MARY'

(É. Kiss 1998, ex. 5)

In Hungarian and similar languages displaying an identificational focus position in the left periphery of the sentence, these two focus notions are clearly not interpretational variants but associated with different structural positions.[90] Exhaustive identification

[89] The two types have different semantic and syntactic properties that we will see in section 3.4.
[90] Even though the existence of these focus types has been acknowledged by others in the literature, Kiss (1998) insists that the distinction in Hungarian is crucial and must be structurally represented.

can be expressed only by a constituent preposed into the preverbal identificational focus slot. The constituents whose only semantic role is the marking of the novelty of the information they carry, however, have no distinguished position in the sentence; they typically appear *in-situ* in postverbal position (É. Kiss 1998:249)

On a related note, identificational (and narrow) focus has also been claimed to have contrastive and non-contrastive interpretations. For example, É. Kiss (1998) attributes a [+/-contrastive] feature to identificational focus. However, although contrastive focus can be viewed as a sub-case of exhaustive listing, it can only arise in certain pragmatic contexts, as in (11):

(11) A: Anna bought a dress yesterday afternoon.
B: No, it was a [$_{F}$ **PAIR OF TROUSERS**] she bought (not a dress).

Moreover, nearly a century of literature on accent and focus provide dozens of examples of contrast indicated by pitch accent alone, and not from the properties of identificational focus.

(12) Yoú may call it **DÁRK** blue, Í should say it was **BLÁCK**.
(Coleman 1914, in Bolinger 1961)

Indeed, even É. Kiss argues that identificational focus needs not be contrastive in English or Hungarian. For instance, an English cleft construction is not necessarily odd in response to a *Wh*-question, which suggests that this may not be a fail-safe means of eliciting new information focus. Indeed, Kiss suggests that in such cases (13B) the focus is exhaustive but not contrastive (Kiss 1998:268(67)):

(13) A: Who wrote *War and Peace*?
B: It was [$_{F}$ **TOLSTOY**] who wrote *War and Peace.*

Others, such as Tsimpli (1995), Vilnuka (1995), Vallduví (1992), Krifka (1992) assimilate identificational and information foci via different analyses (e.g. LF movement of information focus in scope position, a VP analysis of focal material, or an illucotionary operator that binds both types). These analyses provide a more uniform treatment of focus rather than a clear dichotomy of focus types based on structural and semantic properties.

The concept of identificational focus has also been equated with narrow focus in the literature mainly by É. Kiss (1998). However, these two terms in fact represent two different parameters of focus: narrow focus refers to the size of a focus constituent while identificational focus refers to the discourse characteristics of a focus constituent (Cohan 2000). Consider the following example of narrow focus which is not identificational or contrastive.

(14) A [$_{F}$ **PARCEL**] was delivered for you today

In accordance with Rochemont's (1986) notion of c-construable, which broadly means 'under discussion', where this can be interpreted as given information, or that which is already present in the discourse context, the example in (13) includes any information which is not c-construable, and as a result is considered a case of presentational focus.

Other authors have equated narrow focus with contrastive focus, but again, they are not precisely the same thing: contrastive focus has a particular purpose in discourse,-contrastive focus being associated with discourse contrast- and while it is often narrow, it need not be. Likewise, Ladd (1980) noted that while narrow focus can indicate a contrast, it does not necessarily do so (cf. also 14).

The notion of contrastive accent/stress was recognized long ago in the study of sentence stress and accent (e.g., Coleman 1914 in Bolinger 1962). Bolinger (1962) observed that accent is permitted (although not always required) on most words within a sentence when there is a contrast, and Jackendoff (1972) argued that this accent serves as a marker of focus. Rochemont (1986) is among those who proposed that contrastive focus be considered distinct from other foci. Constructed examples of contrastive accent (from Bolinger 1962 (15a), (15b) and Jackendoff 1972 (16a), (16b)) appear below:

(15) a. You may call it dark **BLUE**, I should say it was **BLACK**.
b. Carol **LIKES** Bill, she just **TREATS** him badly.

(16) a. Avoid **IN**digestible foods in your diet and favour di**GES**tible ones.
b. I would like you to work **WITH** me, not **AGAINST** me.

In (15a) *dark blue* contrasts with *black,* and in (15b), *likes* with *treats badly.* Bolinger (1962) and Jackendoff (1972) both pointed out that even syllables that do not typically get stressed can be accented in contrastive contexts: thus accent can occur on *in-* of *indigestible* when it contrasts with *digestible*, and on *with* and *against* when they contrast with each other. Like Ladd's narrow focus, these examples all represent highlighting of the smallest constituent possible connected to the accent in some cases, even smaller than a word.

The above discussion illustrates that identifying semantic categories of focus is not a matter of agreement, although certain distinctions seem to find enough support and empirical justification.

In what follows, I move on to review two primary functions of focus from a semantic viewpoint. The main assertion to follow from this discussion is that the function of focus is independent from its semantic manifestations. As it will become apparent in the following sections, neither contrast nor exhaustiveness or identification is a property of a particular type of focus. Focus is a uniform phenomenon of expressing new information and the different semantic interpretations can be predicted or determined from the source of alternatives by the context.

3.3. The Functions of Focus

Focus highlights information for communicative purposes. Research on focus primarily aims to identify what exactly these communicative purposes are. There are two main perspectives on this research area. One is that focus highlights new information in a discourse, information 'which is represented by the speaker as being new, textually (and situationally) non-derivable' (Halliday 1967; cf. also Sgall et al 1986, Rochemont 1986, Lambrecht 1994, among others). Another view is that focus signals the existence of alternatives to the item in focus (cf. Rooth 1985, Krifka 1991, Jacobs 1991). The question in (17a) can be understood to presuppose that *John will drive somewhere tomorrow.* Proponents of the view that focus represents new information consider the focus phrase of the response in (17b), *to Edinburgh*, to be new information. This constituent serves as the sentence focus. Furthermore, the presupposed material, which is given by the context (that *John will drive somewhere tomorrow*), is de-accented.

(17) a. Where will John drive tomorrow?

b. John will drive [$_{F}$ to **EDINBURGH**] tomorrow.

Proponents of the alternative view of focus analyze the question-answer pair in (17) differently. The question in (17a) asks for places *x* such that it is true that *John will drive to x tomorrow*. The focus of the answer in (17b) identifies a particular place *x* that satisfies the proposition, namely *to Edinburgh;* the focus thus can be understood to select this destination out of all the alternative destinations that Alex could potentially drive tomorrow. Krifka (1999a, b) points out that the two views can result in different analyses for the domain of focus. He provides the following discourse sequence (slightly adapted), where (18a) and (18b) are responses A might make to the question posed by B.

(18) A: My car broke down.

B: What did you do?

(a) A: I called a [$_{F}$ **MECHANIC**]

(b) A: I [$_{F}$ **FIXED**] it.

Both perspectives come up with the same domain of focus for the response in (18a). If focus marks new information, the focus here is *called a mechanic*, since this is the new material. If focus signals the existence of alternatives, B's question asks for the things A did when the car broke down: the set of *x* such that it is true that *A did x*. The constituent *called a mechanic* is the alternative (of any of the things that A might do when his car breaks down) that satisfies this proposition, and is thus the focus of the sentence. The two perspectives result in a different analysis, however, for the focus in (17b). For the new information perspective, the focus in the response is simply *fixed*, as *it (=the car)* is already given. The alternative approach puts focus on *fixed it*, since the question asks for the set of *x* such that it is true that *A did x*, as in example (19):

(19) A: Who did you meet at the party?

B: I met [$_{F}$ **MARY**].

The absence of accent on *it* (which is essentially never accented) in (18b), which typically refers to a given entity, suggests that whatever the function of focus,

givenness appears to play a role in accent assignment (Krifka, 1998, 1999a; Ladd 1980, 1996). The de-accenting of given material might initially appear to favour a new information explanation. However, the presence of accent on elements in contexts where these elements are given in the discourse favours an alternatives view. A constructed example that illustrates such a context appears in (20).

(20) A: How do you usually get to work?
B: [$_{\mathbf{F}}$ I ride my **BIKE**] or [$_{\mathbf{F}}$ take the **BUS**]. Today, [$_{\mathbf{F}}$ I rode my **BIKE**].

The alternative view provides a natural account of focus in these examples. The focus constituents *ride my bike* or *take the bus* are the relevant means of getting to work, selected from the set of alternative means of getting to work. The focus constituent *rode my bike,* which can be understood to answer the question *How did B get to work today?* is a selected item from the set of alternatives that the discourse explicitly provides: *rode my bike* and *took the bus.* While the first focus center on *bike* and *bus* in (20B) would not pose a problem for the new information perspective, the second focus center on *bike* is problematic, since *bike* is not new information.

Based on what has been discussed, it becomes obvious that É. Kiss's (1998) distinctions between identificational vs. information focus (discussed in section 3.2) can be considered the third perspective on focus. Distinctions between categories of focus have long been noted (as discussed in section 3.2) and É .Kiss attempts to combine the new information approach with the alternative perspectives on focus to these observed categories. As a result, she justifies her dichotomy by relating the new information perspective to information focus and the alternatives perspective to identificational focus.

3.3.1 Alternative Semantics

Rooth (1985, 1992) proposes a semantic theory of focus, according to which the focus generates a second dimension of meaning, -except from the ordinary one- the focus meaning: given a sentence where focus can be identified, a set of alternatives is construed. The set of possible alternatives is constrained within a certain contextual domain reminiscent of Jackendoff's (1972) Presupposition-set. This focus meaning is

created by replacing the focused constituent with a variable of the appropriate type and creating a set of meanings by instantiating the variable with the contextually available alternatives of the same type. This set is called the 'alternative focus set'. Let me briefly illustrate this.

The ordinary meaning, or else the semantic value of a sentence S, is decided by the semantic component which associates semantic values with phrases and is assumed to be a proposition, whereas the semantic value of a proper name is assumed to be an element of the domain of individuals and the semantic value of a common name denotes sets of individuals (Kempson, 1977). Let us look at the following example.

(21) Alexander washed [$_{\mathbf{F}}$ the **WHITES**]

The semantic value of the sentence above is a proposition [washed (a, w)], where *a* is an individual and *w* is the set of items that *a* washed. The focus semantic value of a phrase is 'the set of propositions obtainable from the ordinary semantic value by making a substitution in the position corresponding to the focused phrase' (Rooth 1992: 76). Let us see example (22), for illustration:

(22) Which laundry did Alexander wash?
He washed [$_{\mathbf{F}}$ the **WHITES**]

The focus semantic value for [$_{s}$ *He washed* [$_{\mathbf{F}}$ *the whites*]] is the set of propositions of the form *Alex washed X laundry*, where X can be colored laundry, the white laundry, the woolens, the synthetics, etc. In the answer *the white laundry* is selected to be substituted for X, and is therefore the focus value by Rooth's definition. Notice that the presupposition and the focus complement each other and the set of alternatives is contextually defined.

An important implication of this theory is the treatment of the notion of contrastive focus (discussed in Section 3.2); focus and contrast are naturally related presenting no difference.

(23) Which laundry did Alex wash, the white or the coloured?
He washed the [$_{\mathbf{F}}$ **WHITE**] laundry.

As it becomes apparent, (23) is exactly like (21), with the difference that the set of alternatives is specified overtly. A contrastive focus takes one element of the contrast set as the focus and eliminates the other alternatives. Alternative Semantics make no distinction between new information and contrastive focus. Contrast does not belong to the semantics of focus but it is rather a pragmatic notion. In this respect, it differs from the syntactic approaches that were discussed in Chapter 2 (Rizzi 1997) and others in the so-called cartographic trait - which makes a direct correlation between position and interpretation (Cinque 1999, Poletto 2000, Beninca 2001, Belletti 2004, Beninca & Poletto 2004, Kiss 1998). Focus is viewed as an interpretation operator that can adjoin to any constituent and which introduces a variable into an LF representation; this variable is linked up with something else in the representation by means of indexing (see Rooth 1996). Alternative Semantics also differs from other semantic theories of focus which make interesting assumptions about contrast such as the Structured Meaning approach (Krifka 1991, 2006) and Büring's (1997, 2003) semantic theory (the last is discussed in Chapter 5: 5.4.1.3).[91]

[91] Krifka accounts for focus within the Structured Meaning approach. Specifically, the focus-induced interpretation of a sentence is an ordered sequence, the structured meaning, whose members are the property obtained by λ –abstracting on the focus and the ordinary semantic interpretation of the focus. An example is given in (i).

(i) John introduced [Bill]Foc to Sue.
<[λ x[introduce(john, x, sue`)]], bill>

Krifka (1991, 2006) argues that sentences are split into topic and comment. This initial split may be further split into focus and background. In this respect, Krifka allows for a topic to contain a focus and according to Krifka a comment needs not be identical to focus. An example from Krifka (2006) is given in (ii). The notation in (ii) is Krifka's.

(ii) a. When did [Aristotle Onassis] Topic marry Jacqueline Kennedy?
b. [He]Topic [married her [in 1968]Focus]Comment.

Krifka also examines the relation between contrast and topic. Allowing topics to contain a focus and assuming that focus induces alternatives, Krifka (2006) accounts for what is named by other researchers contrastive topics (see Büring 1997 among others). So for Krifka contrastive topics are topics that contain a focus. Recall that for Krifka an utterance with a focus sensitive operator is an instance of contrastive focus, while others treat it as an instance of contrastive topic. An example where a topic contains a focus is given in (iii). The example is from Krifka.

(iii) a. What do your siblings do?
b. My [SISter]Focus]Topic [studies MEDicine]Focus, and[My [BROther]Focus]Topic [is working on a FREIGHT ship]Focus.

Example (iiia) contains a general wh-question that can be interpreted as containing two sub-questions, namely, 'what does your sister do?' and 'what does your brother do?' Example (iiib) answers the question in (3a), and the answer in (3b) is organized per sub-question. Krifka (2006: 44) notes that in (iiib) "focus on sister indicates an alternative to the topic 'my sister', namely, 'my brother' ".

Concluding, in this model, focus is linked to a variable that evokes alternatives; it signals the existence of alternatives to the item in focus. This notion of focus relates to the given/new distinction in a different way from the syntax-oriented approaches already discussed in Chapter 2 (departing from Chomsky 1971, 1976 and Jackendoff 1972. Basically, it does not detach the meaning of the focus from the meaning of the background by removing the focus out of the background as in the LF approaches (cf. Chapter 2). It leaves the focus *in-situ* and compositionally computes the alternatives.

Items that are new can be understood to function as alternatives to items that are already present in the discourse or are otherwise salient in the minds of the speaker and hearer, and thus these inevitably have potential alternatives. The notion of alternatives can also treat the problem of accent on given items in contrast more naturally, without having to claim these as exceptions, since items that are being contrasted are being selected from a list of other possible referents (cf. Chapter 2, section 2.6.7). In Chapter 2, section 2.6.3, I briefly discussed that formal semantic theories have allowed for the development of semantic frameworks that can model the meaning of focus particularly in focus-sensitive contexts. The treatment of focus as new information has not lent itself to this kind of application. The status of material as new (and only new) does not provide any means for generating the comparisons implicit in focus-sensitive contexts. However, I showed that the interaction between focus and semantic operators is not always a criterion for associating the two phenomena (Chapter 2: 2.4.2). In Chapter 4: 4:2, I also ague that semantic focus does not directly affect the propositional content of the sentence.

The Alternative Semantics model is the semantic model adapted in this thesis. The reasons are, first, its simplicity and conceptual economy (not involving covert movement operations) and second, its uniform treatment of the different types of focus. The semantic properties of focus, such as exhaustivity or contrast, are not inherent properties of focus itself. The characteristics of cases involving the above properties do not pertain to the focus theory itself, but to the semantic object available as antecedent for the semantic variable introduced by the focus phrase. The equal treatment of contrast and new-information focus can be easily read off via the application of the alternatives function which forms the alternatives applied to the ordinary meaning of the focused expression. In trying to provide a uniform analysis between semantic manifestations of focus in the interfaces, the Alternative Semantics

provides us with the conceptual machinery for a unified semantic approach: Alterative Semantics does not distinguish between semantic types focus; it accounts for contrastive focus in the same way, as it accounts for focus by assuming that it evokes alternatives being associated with a background that identifies the set against which the focus is evaluated.

3.4 The Semantic Component: Two types of Focus?

Having presented the Alternative Semantics account, in the following sections I challenge the assumption shared in previous literature on Greek that there are two different types of focus, namely one involving contrast or exhaustivity and one involving information focus and that the two are uniquely associated with different structural positions. I do that by testing the main aspects that the two types of focus have been argued to differ in É. Kiss's (1998). Sections 3.4.1-3.4.3 mainly provide evidence showing that in Greek both *ex-situ* and *in-situ* foci can be interpreted as exhaustive focus (contra Kiss (1998)). Section 3.4.4 provides evidence that Greek *ex-situ* and *in-situ* foci can also both be interpreted as new information foci and section 3.4.5 shows that contrastive focus may be preverbal or postverbal but need not or must not appear obligatorily in any position.

Let me first present what previous literature on Greek has argued with respect to the syntactic encoding of semantic focus types. Greek has traditionally been described as having mainly one focusing strategy: focus fronting (Agouraki 1990, 1993; Tsimpli 1995, 1997; Tzanidaki 1994).[92] However, all the above authors among others researchers (Baltazani 1999, 2002; Alexopoulou 1999; Tsiplakou 1998) have

[92] More specifically, Tsimpli provides an analysis of Focus for Greek using the same syntactic tools as Brody (1990) and Rizzi (1997) do, although her account is independently motivated. According to Tsimpli (1995, 1997) the basic word order for Greek is VSO. She further keeps a Split-IP structure for Greek. In the VSO order, the subject appears in its canonical position, namely [Spec, AGRP] and the verb moves to TNS, in a V-to-I movement. VOS and SVO are the orders derived by Topicalization of the subject. In both orders the subject occupies a Topic position adjoined to TNSP, they only differ in the directionality of adjunction. With respect to focus constructions, the focus phrase is found moved to the specifier of the Focus Phrase. This movement is in accordance with the satisfaction of the Focus Criterion. In situ foci are also grammatical, since they move at LF, as this movement is obligatory. Tsimpli argues that the head of the Focus Phrase can be specified in addition for the wh-feature-apart from the f-feature. This means that structurally in matrix Wh-questions the two features can be hosted under the same head, hence both the wh-phrase and the focus phrase compete for the same structural position, namely [Spec, FP]. This accounts for the incompatibility of focus in matrix Wh-questions. Due to the presence of wh-phrase, the [Spec, FP] is no longer available for the focus phrase.

recognized the fact that there is evidence for a focus *in-situ* strategy in the language. Nevertheless, their common assumption is that focus strategies in Greek maintain a rigidly fixed correspondence between the syntactic position of focus and its semantic interpretation. More specifically, Tsimpli (1995, 1997) formulates a semantic division between *ex-situ* and *in-situ* focus and constantly links the *ex-situ* focus with exhaustive listing interpretation (24a) and the *in-situ* focus with new information focus (24b), à la Kiss (1998). [93]

(24) a. [$_{FP}$ ton **YANI**] [$_{F}$ kitakse [$_{VP}$ i Maria]]] (oxi ton Petro)
the Yani-acc looked-3sg the Maria-nom (not the Petros-acc)
'Maria looked at Yanis (not Petros).'

b. [$_{DP}$ i Maria] [$_{V}$ kitakse [$_{FP}$ ton **YANI**]]]
the Maria-nom looked-3sg $_{FP}$ the Yani-acc
'Maria looked at Yanis.'

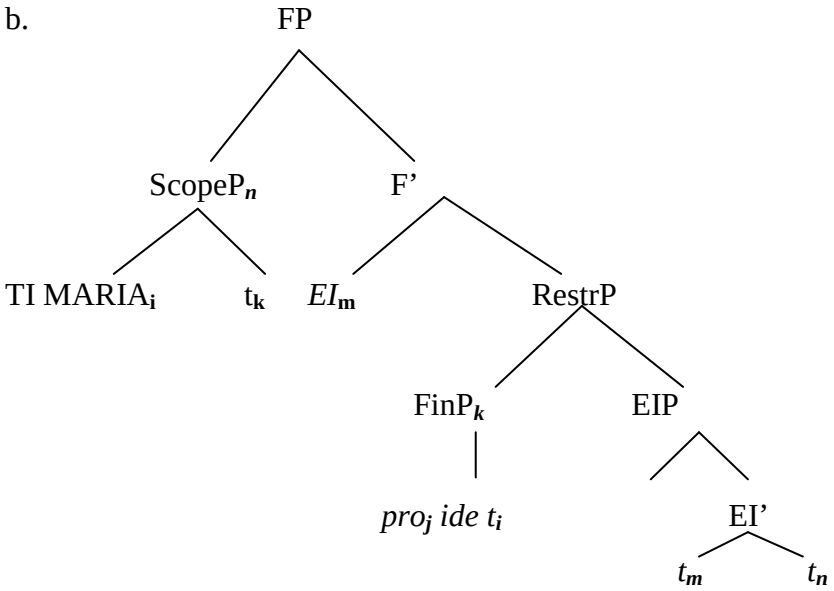
In (24) the preposed focused NP *ton Yani* can be interpreted as contrastive or exhaustive, meaning that Maria saw *Yani* and not someone else or that she only saw *Yani*. On the contrary, the focused DP in (24b) is the answer to the *wh*- question 'who did Maria see?', and this answer is *ton Yani.* No contrast is entailed when the focus occupies the post-verbal or *in-situ* position.

In the same fashion, Alexopoulou (1999) and Baltazani (1999, 2002) although acknowledging the different characteristics between *ex-situ* and *in-situ* focus, still advocate a mapping which relates the specific positioning of focus with a specific semantic interpretation. In Baltazani's (1999) analysis, which follows Horvath (1997), the preposed focus phrase carries exhaustive interpretation caused by the existence of an exhaustive identification (EI) operator. Baltazani also ascribes contrastive interpretation to *ex-situ* focus and as a result *ex-situ* focus carries features for both interpretations (+ exhaustive, +contrastive), as opposed to *in-situ* focus which is information focus. Hence, the clause in (25a) has the representation in (25b):

[93] Ex-situ focus equals to preverbal or moved focus and *in-situ* to post-verbal focus to be discussed in section 3.3.

(25) a. o Yanis [$_{\mathbf{F}}$ ti **MARIA**] ide
the Yanis-nom the Maria-acc saw-3sg/PS
'It was **Maria** that John saw'

(25) b.



It is noteworthy that both Tsimpli (1995) and Baltazani (1999) propose a uniform treatment of focalization phenomena using, however, different analyses. According to Baltazani's analysis (which assumes a split-CP structure à la Rizzi (1997)), shown in (25b), the EI attracts the object (which is marked with the [+F] feature) to ScopeP and so it scopes over it. The [+F] feature percolates to ScopeP. FinP, which is a remnant dominating the verb, a pro subject and the trace of the moved object, moves to Spec, RestrP, since it is the restrictor of the EI operator, and needs to c-command it. ScopeP moves to Spec, FP to check its [+F] feature. The EI head moves to the head of FP, because it needs to merge with a focus head. Thus, contrastiveness in preverbal foci is the effect of the EI operator.

On the other hand, as Baltazani argues, the EI operator is absent in information focus cases and as a result they cannot receive a contrastive interpretation. Baltazani (1999) accounts for information focus arguing that both information and contrastive focus in Greek move to the same position in the left periphery but what makes information focused DP look like it has not moved from its post-verbal position is that FinP, the remnant sitting in the Spec, RestrP further moves to a position higher than the focus, to a projection she calls GivenP. GivenP sits immediately above FP and when FinP moves there it becomes topicalized.

(26) a. o Yanis ide [$_{\mathbf{F}}$ ti **MARIA**]
the Yanis-nom saw-3sg/PS the Maria-acc
'John saw Maria'

Hence, Baltazani offers a uniform treatment of both contrastive and information foci in terms of movement to the FP in the left periphery, the latter via remnant movement of post-focal material. However, Baltazani's analysis still faces an important problem: *in-situ* foci still have a different interpretation from *ex-situ*/preverbal foci. If foci end up in the same structural position in both cases, what gives these two linear orders a different meaning? Could it be the absence of the EI operator in information/post-verbal focus? However, this could only be a stipulation, and even if that was the case, what is the mechanism that blocks the existence of the EI operation in post-verbal foci? This is a difficult problem to circumvent, if one maintains that there are two structurally distinct foci.

Tsimpli (1995) faces the same problem although emerging from a different analysis. Tsimpli (1995) offers a uniform analysis of focus without resorting to a remnant movement analysis, but rather arguing that Greek focus phrases can be raised overtly but must be raised at LF (in lines with Rizzi 1997). In this sense, the *in-situ*/ information focus is described as identificational operator moved into scope position in LF. In her approach, a focused DP or an adjunct is always interpreted in the specifier of a left-peripheral functional projection – whether it actually appears there or stands in situ, and whether or not it expresses exhaustive idenfication. Compare (27a) and (27b):

(27) a. [$_{\mathbf{FP}}$ ston **PETRO** [$_{\text{TNSP}}$ danisan to vivlio]]
To the Peter-acc lend-3pl/PS the book-acc
'It was to Peter that they lent the book'
b. [$_{\mathbf{TNSP}}$ Danisan [$_{\text{VP}}$ to vivlio ston PETRO]]
'They lent the book to Peter'

Even though Tsimpli translates (27a) and (27b) differently: the former, containing a preposed focus, as a cleft construction, and the latter, containing an *in-situ* focus, as a simple sentence, she assigns to them identical LF representations. Both foci occupy Spec, FP. Tsimpli's analysis faces the problem that other analyses that assume LF

movement have to deal with as stated in Chapter 2 (sections 2.5.1-2.6) but also the question remains: if focus can receive an interpretation *in-situ*, why move at LF?

More recent research, however, (Grillia, 2004; Haidou 2004, 2006) has given more interesting insights in the description of the Greek focus phrase, since it allows for an indirect mapping between syntax and semantics. This research has explored the relation between the morphosyntax and the semantics of focus and argues that the distinction between *in-situ* focus equalling to new information and *ex-situ* focus equalling to exhaustive-indentificational focus cannot be upheld for Greek. From an interpretive perspective, here, I argue that there is only one uniform focus expressing non-presupposed information; the other interpretations are discourse/contextual implementations. From a syntactic perspective, I claim that the encoding of the two foci (by *ex-situ* and *in-situ* strategies) is misleading, since there is only one focus at the syntactic component with different realizations at different positions.

The first three arguments presented below involve the property of exhaustive identification. I will show that the Greek data necessitate an approach in terms of Rooth (1992) as described in Section 3.3.1 and the dichotomy that E. Kiss (1998) advocated cannot be maintained for Greek.

3.4.1 The property of exhaustive identification

With respect to exhaustivity, the first piece of evidence comes from test A, which É. Kiss attributes to Szabolcsi (1981). This test supports the idea that identificational focus expresses exhaustive identification and information focus does not, as follows: given a pair of sentences where the first contains focused co-ordinate DPs and the second contains only one of those focused DPs, if the second sentence is *not* among the logical entailments of the first, then the type of focus involved is identificational (exhaustive). According to É. Kiss (1998), test A shows that in Hungarian *ex-situ* focus will always have identificational properties.

(28) a.Mari [$_{\mathbf{F}}$ egy **KALAPOT** és egy **KABÁTOT**] nézett ki magának.-/->
Mary a hat-acc and a coat-acc picked out herself-acc
'It was a hat and a coat that Mary picked out herself.'

b. Mari [$_{F}$ egy **KALAPOT**] nézett ki magának.
Mary a hat-acc picked out herself-acc
'It was a hat that Mary picked for herself.'

In example (28a), the clefted constituent consists of a coordinated DP phrase, while in example (28b) the clefted constituent consists of only one of the two conjuncts. As shown in (28), (28b) is not entailed by (28a). This means that the clefted constituent in (28b) is interpreted exhaustively. As already pointed out, it is the exhaustive interpretation of the focused DP in (28b) that causes the failure of the implication.

Similarly to the data in (28) above, Baltazani (1998) applied the co-ordination test to Greek and argued that preverbal object foci have to be interpreted exhaustively. Baltazani illustrated her point on the basis of example (29). In example (29a) the coordinated phrase *sto Yani ke sti Maria* 'for John and for Maria' appears in preverbal position. Example (29b) contains only one of the two conjuncts, namely *sto Yani* 'for John'. Examining the entailment in (29), Baltazani (1998) observes that (29b) is not among the logical entailments of (29a). Thus, she concluded that the preverbal object focus in (29b) is interpreted exhaustively.

(29) a. [$_{F}$ sto **YANI** ke sti **MARIA**] agorasa padeloni.-/->
to-the John and to-theMaria buy-1sg/PS trousers-acc-sg
'I bought a pair of trousers for John and for Maria.'

b. [$_{F}$ sto **YANI**] agorasa padeloni.
to-acc John-acc buy-1sg/PS trousers-acc-sg
'I bought a pair of trousers for John.'

As a result, she claims that (29b) is not among the logical entailments of (29a) and therefore that *ex-situ* focus is always identificational. However, Grillia (2004, 2009) and Haidou (2004) independently show that Baltazani's (1998) conclusions need to be rethought, based on the observation that the above claim holds only if the predicate is interpreted collectively.

Baltazani also discussed the example in (30). In contradiction to (29a), in example (30a), the focus appears in postverbal position. Example (30a) contains a coordinated phrase that is in postverbal position and is in focus. Example (30b)

contains only one of the two conjuncts. As indicated in (30), the entailment goes through; (30b) is among the logical entailments of (30a).

(30) a. agorasa padeloni [$_F$ sto **YANI**] ke [$_F$ sti **MARIA**] -/->
buy-1sg/PS trousers-acc to the John-acc and to the Maria-acc
'I bought a pair of trousers for John and for Maria.'

b. agorasa padeloni [$_F$ sto **YANI**].
buy-1sg/PS trousers-acc to the John-acc
'I bought a pair of trousers for John.'

In what follows, before I examine Baltazani's data in more detail, I outline Gryllia's (2009) tests which show that the co-ordination test interacts with a collective interpretation of the (a) sentence. Once we control for the collective interpretation of the (a) sentence of the co-ordination test, the data are not contradictory any more, and they all show that preverbal object foci in Greek are not exhaustive.

Gryllia (2009) tested a group of 20 speakers which were asked to give their entailment judgements for examples (29) and (30). With respect to the entailment judgement in example (30), all speakers agreed that the entailment goes through, whereas with respect to the entailment judgement in example (29), there was a split in the group. Specifically, 12 speakers claimed that in (29) the entailment does not go through (Group A) and 8 speakers claimed that the entailment goes through (Group B). Why did Group B allow the entailment to go through? A closer inspection of the data suggests that there is a correlation between the interpretation of sentence (29a) and the failure or not of the entailment. In particular, Group A interpreted (29a) only collectively, whereas Group B interpreted (29a) primarily distributively and claimed that the entailment does go through.

The contrast between the two groups confirms the observation that there is a correlation between the distributive interpretation of the (a) sentence and the entailment. Whenever speaker interprets the (a) sentence distributively, they claim that the entailment goes through. This finding may at first sight seem surprising, but it is not. The entailment pattern that we found in the co-ordination test is the same as the entailment pattern that is found in a known test for collectivity. An example of the collectivity test is given in (31), (cf. Gamut 1991: 32).

(31) a. Cheech and Chong are fun at parties.
b. Cheech is fun at parties.

Sentence (31a) contains a coordinated DP, while sentence (31b) contains only one of the two coordinated DPs. As shown in (31), sentence (31a) does not entail (31b); it may well be the case that Cheech and Chong are fun only when they are together. In the collectivity test, the entailment judgement informs us about the interpretation of the coordinated phrase in the (a) sentence. In (31) the entailment does not hold because the coordinated DP *Cheech and Chong* is interpreted collectively. This means that in order to reliably use the co-ordination test, one should make sure that the (a) sentence is not interpreted collectively, as this automatically results in a failure of the entailment, independently of the interpretation (exhaustive/ nonexhaustive) of the (b) sentence. An illustration of this given in the examples (32) and (33).

(32) a. [$_{\mathbf{F}}$ sto **YANI** ke sti **MARIA**] agorasa padeloni. -/→
to-the John and to-theMaria buy-1sg/PS trousers-acc-sing
'I bought a pair of trousers for John and for Maria.'
b. [$_{\mathbf{F}}$ sto **YANI**] agorasa padeloni.
to-acc John-acc buy-1sg/PS trousers-acc-sing
'I bought a pair of trousers for John.'
c. agorasa padeloni [$_{\mathbf{F}}$ sto **YANI**].
buy-1sg/PS trousers-acc to the John-acc
'I bought a pair of trousers for John.'
Condition: (32a) is interpreted collectively

(33) a. agorasa padeloni [$_{\mathbf{F}}$ sto **YANI** ke sti **MARIA**] →
buy-1sg/PS trousers-acc to the John-acc and to the Maria-acc
'I bought a pair of trousers for John and for Maria.'
b. agorasa padeloni [$_{\mathbf{F}}$ sto **YANI**].
buy-1sg/PS trousers-acc to the John-acc
'I bought a pair of trousers for John.'

c. [$_{F}$ sto **YANI**] agorasa padeloni.
to-acc John-acc buy-1sg/PS trousers-acc-sing
'I bought a pair of trousers for John.'
Condition: (33a) is interpreted distributively

According to Gryllia's tests, in example (32a), the predicate is interpreted collectively. (32b) contains a preverbal focused object, and is not among the logical entailments of (32a). (32c) has a postverbal focused object and is also not among the logical entailments of (32a). In (33), there are two readings available for all speakers, namely, a collective and a distributive reading. Specifically, when (33a) is interpreted distributively, then (33b) is among the logical entailments of (33a) and the same holds for (33c). This means that the preverbal focused object in (33c) is not exhaustive. If (33a) is interpreted collectively, then the entailment always fails, as expected.

Hence, examples (32) and (33) provide evidence that the co-ordination test interacts with the collective reading of sentence (a). In this respect, when applying for the co-ordination test, we should control for collectivity and closely examine the (b) sentence, since it is crucial for deciding whether the focused DP is exhaustive. This can be done, for instance, when using (i) an overt distributive marker (apo) and (ii) a plural, in the following way:

(34) a. [$_{F}$ sto**YANI** ke sti **MARIA**] agorasa apo ena padeloni.-/→
to-the John and to-the Maria buy-1sg/PS each one-acc trousers-acc-sg
'I bought for John and Maria a pair of trousers each'

b. [$_{F}$ sto **YANI**] agorasa ena padeloni
to-acc John-acc buy-1sg/PS a trousers-acc-sg
'I bought a pair of trousers for John'

b. agorasa ena padeloni [$_{F}$ sto **YANI**].
buy-1sg a trousers-acc to the John-acc
'I bought a pair of trousers for John.'

(34b) is among the logical consequences of (30a) and the same holds for (34c); therefore the *ex-situ* focus is not exhaustive. Example (34a) can only be interpreted distributively. Grillia (2004) also controls for collectivity by using an 'aggressively

non-D-linked' wh-question, in the spirit of Pesetsky (1987) such as *What the hell did you buy?* for (35b) shown in (35):

(35) a. Ti sto kalo agorases?
What the hell did you buy?

b. sto Yani agorasa [$_F$ **PADELONI**]
to-acc John-acc buy-1sg/PS trousers-acc-sg
'I bought a pair of trousers for John'

Thus, Baltazani (1999) seems to have incorrectly attributed to the preposed focus phrase in Greek an exhaustive interpretation resembling that of the English cleft construction.

To control for the collective reading found in (36), I also use a bare plural instead of a definite DP and replace the singular predicate in (36) with a plural one, as shown in (37) and (38):

(36) [$_F$ ston **PETRO**] danisan to vivlio.
to-the-acc Peter-acc lent-3pl the-acc book-acc
'They lent the book to Peter.'

(37) a. [$_F$ ston **PETRO** ke sto **YANI**] danisan vivlia.→
to-the-Peter-acc and to-the John-acc lent-3pl books-acc
'They lent books to Peter and to John'

b. [$_F$ ston **PETRO**] danisan vivlia.
to-the-acc Peter-acc lent-3pl books-acc
'They lent books to Peter'

(38) a. Danisan vivlia [$_F$ ston **PETRO** ke sto **YANI**] →
lent-3pl books-acc to-the- Peter and to-the- John-acc
'They lent books to Peter and John'

b. Danisan vivlia [$_F$ ston **PETRO**]
lent-3pl books-acc to-the Peter-acc
'They lent books to Peter'

In this case, (37b) is among the logical consequences of (37a) and the same holds for (38a) and (38b). Not only does the preverbal focus not carry an exhaustive

interpretation, but the same focused phrase can also occur in postverbal position with no difference in interpretation:

What the above examples show, is that in Greek the *ex-situ* focus position does not need to receive an exhaustive interpretation. In addition, exhaustivity is susceptible to collectivity, which is not considered by Baltazani (1999).

The second test with which Kiss provides further evidence that preverbal focus expresses exhaustive identification is Test B, which concerns the possibility of negating exhaustivity and information focus. More specifically, in a dialogue pair where the first sentence contains a focus and the second sentence denies the uniqueness of the referent identified by the focus, this focus can only have an exhaustive interpretation. What (39) shows, is that in Hungarian exhaustivity can be negated, as shown in (39a, b), but new information focus cannot (39c, d):

(39) a. Mari [$_{F}$ egy **KALAPOT**] nézett ki magának
Mary-nom a hat-acc picked out herself-dat
'It was **a hat** that Mary picked for herself.'

b. Nem, egy kabátot is ki nézet
no a coat too out picked
'No, she picked a coat too.'

c. Mari ki nézett magának [$_{F}$ egy **KALAPOT**]
Mary-nom out picked herself-dat a hat-acc
Mary picked **a hat** for herself.'

d. *Nem, egy kabátot is ki nézett
no a coat too out picked
'No, she picked a coat too.'

In example (39c) the focused object represents the only thing that *Mari* picked out for herself. In (39d), in contrast, it represents one of the possible relevant things that she could have picked for herself; thus the focused object in (39d) is new information focus. The ungrammaticality of (39d) is obvious because it unnaturally negates the assertion of a proposition where there is a list of possible referents available rather than only one unique referent. Thus, in Hungarian (only) exhaustivity can be negated, while information focus cannot.

If we apply the same test to a Greek example, we can see immediately that there is no direct correlation between *ex-situ* focus and exhaustive interpretation (see also Grillia 2004).

(40) a. [$_{F}$ ena **KAPELO**] agorase i Eleni.
a hat-acc bought-3sg the Helen-nom
'Helen bought **a hat**.'
b. oxi, agorase ke ena pandeloni.
no bought-3sg and a trousers-acc
'No, she bought (this) and a pair of trousers, too.'

(41) a. i Eleni agorase [$_{F}$ ena **KAPELO**]
the Helen-acc bought-3sg a hat-acc
'Helen bought a hat.'
b. oxi,agorase ke ena pandeloni.
no bought-3sg and a trousers-acc
'No, she bought (this) and a pair of trousers, too.'

When applied to Greek, this test shows that *in-situ* focus can also have the exhaustive interpretation. If by negating the proposition that *Helen bought a hat for herself*, we negate the exhaustive reading of the proposition, then both positions of focus can be interpreted exhaustively. This is a second piece of evidence showing that semantic focus interpretation is independent of syntactic position. Both positions - *in-situ* and *ex-situ* - carry the same interpretation. The distinction made by É. Kiss (1998) does not hold for the Greek data as regards to the negation test.

Intuitively, even in the above test the exhaustive interpretation does not seem very salient. This means that it is not clear whether the above exchanges in (39)-(41) identify a unique referent or is the result of the semantic function of *exclusion* of identification, in É. Kiss's terms. I believe that the exhaustive interpretation can be maintained in both syntactic positions, if the sentences imply association with focus with the use of an adverb like *mono* 'only', which inherently carries an exhaustive

interpretation.[94] In such a case, the proposition excludes the possibility that Helen bought something else besides a hat. The addition of the adverb *only* 'mono' can readily induce exhaustive identification:

(42) a. i Eleni agorase mono [$_{F}$ ena **KAPELO**]
the Helen-acc bought-3sg only a hat-acc
'Helen only bought a hat.'
b. oxi, agorase ke ena pandeloni.
no bought-3sg also a trousers-acc
'No, she bought (this) and a pair of trousers, too.

Finally, look at the following example in Greek which also supports the claim that there is no fixed restriction between a specific position and a semantic interpretation:

(43) a. Pou ekane ta psonia i Eleni?
Where did Helen do her shopping?
b. i Eleni ekane ta psonia [$_{F}$ sto **SELFRIDGES**]
Helen-nom did-3sg the shopping-acc at Selfridges
'Helen did the shopping at Selfridges'
c. **[**$_{F}$ sto **SELFRIDGES**] ekane ta psonia I Eleni
'At Selfridges, Helen did the shopping'

It is important to note that both positions in (43) can carry an exhaustive identification interpretation or a new information interpretation. No difference in meaning though is found whichever interpretation is chosen. Both positions allow for the reading that *Selfridges* is the only place that Helen did her shopping (exclusion of identification) or alternatively for the reading that other places were also available from which Helen shopped except from Selfridges (inclusion of identification).

In consequence, there is no structurally predetermined interpretive difference between a preverbal and a postverbal focus in Greek. More importantly, a focused phrase carrying exhaustive interpretation can be an answer to a *wh*-question, which is

[94] For a similar test in Italian, see Brunetti (2003). Brunetti interestingly shows that the preverbal focus position is acceptable only if the sentence includes an *only*-phrase. In this case, the focus can express exhaustive identification.

rather unexpected given the fact that this is traditionally the context for an information focus interpretation. Thus, (39c) is acceptable as an answer to a wh-question meaning that Helen either went shopping at Selfridges only or in other places too.[95]

3.4.2 Identificational imposes exclusion of identification

The second argument with respect to the interpretive effects of focus is provided by Test C, which shows that identificational focus cannot consist of a universal quantifier, an existential quantifier, an even-phrase, or an also-phrase, while this is not the case for information focus. É. Kiss attributes these restrictions to the semantic content involved in these cases, which are not compatible with the semantic function of exclusion of identification. Both in Hungarian and in English (44)-(46) are ungrammatical:

(44) *Mari [$_{F}$ **MINDEN KALAPOT**] nézett ki magának (UNIVERSALQUANTIFIER)
Mary every hat picked out herself-dat
*'It was every hat that Mary picked out for herself'

(45) * Mari [$_{F}$ **EGY KALAPOT IS**] nézett ki magána (EXISTENTIAL QUANTIFIER)
Mary a hat also picked out herself-dat
?'It was also a hat that Mary picked for herself'

(46) *Mari [$_{F}$ **MEG EGY KALAPOT IS**] nézett ki magána (*EVEN*-PHRASE)
Mary even a hat also picked out herself-dat
* 'It was even a hat that Mary picked for herself'

These distributional restrictions follow from semantic incompatibility, most noticeably with the universal quantifier. Examples (47a-f) exemplify exhaustive listing focus, whereas (47g) exemplifies new information focus. Example (47h), although involving displacement, is not a cleft but (according to Kiss) a topic structure. Once more, Kiss's claims for English as well, similarly to Hungarian are not fully consistent with native intuitions as shown in (47):

[95] According to Brunetti (2003) the same function of focus is accomplished in Italian, namely carrying exhaustive interpretation when the focus is under the scope of the *solo* 'only' adverb.

(47) a. *It was [$_{F}$ **EVERY HAT**] that Mary picked for herself
b. *It was [$_{F}$ **EVERYBODY**] that Mary invited to her party
c. ?It was [$_{F}$ **ALSO A HAT**] that Mary picked for herself
d. *It was [$_{F}$ **EVEN A HAT**] that Mary picked for herself
e. *It was [$_{F}$ **EVEN JOHN**] that Mary invited to her party
f. ?It was [$_{F}$ **SOMETHING**] that Mary picked for herself
g. Mary invited [$_{F}$ **EVERYBODY/EVEN JOHN**] to her party
h. Even John, Mary invited to her party

Interestingly however, the Greek examples do not show this identification vs. informational focus contrast as (48-51) reveals:

(48) [$_{F}$ **KATHE FITITIS**] perimeni ta apotelesmata (UNIVERSAL QUANTIFIER)
every student-nom wait-3sg the results-acc
'Every student waits for the results'

(49) [$_{F}$ **KAPJA THEMATA**] tha lithoun avrio (EXISTENTIAL QUANTIFIER)
some issues-nom will-fut be solved-3pl tomorrow
'Some issues will be solved tomorrow'

(50) [$_{F}$ **AKOMI KAI STIN MARIA**] edosan vravio (EVEN-PHRASE)
even and to-the Maria-acc gave-3pl prize-acc
'They gave a prize even to Maria'

(51) [$_{F}$ **KAI LOULOUDIA**] tis agorase tis Elenis o Janis (ALSO-PHRASE)
also flowers-acc her-cl bought-3sg the Helen-gen the John-nom
'He also bought flowers for Helen'

As (48)-(51) show, quantifiers can occupy the preverbal position in Greek. Therefore, no restriction with respect to exhaustivity applies: the focus constituent can be any of the quantifier phrases in preverbal position. However, native speakers' opinions are not uniform on the question whether the sentences in (48)-(51) express exhaustive identification. For instance, with the quantifier *kapja* in (49) we can get a scalar implicature; only some issues will be resolved, some others will remain unresolved. Most likely not all quantifiers in preverbal position have an easily available

interpretation of exclusion of identification. However, they definitely carry new-information focus, which is also significant, since a preverbal as well as a postverbal position for the quantifier can be filled by a new-information focus phrase.

Especially interesting is the case of the existential quantifier. According to É. Kiss, the existential quantifier in Hungarian is not compatible with new information focus, in particular when found in postverbal position (which is the only position consistent with new-information focus in É. Kiss's terms). However, in Greek, this is not the case, as shown in (52):

(52) a. Pios tha erthi?
Who will come?
Who is coming?
b. ? Tha erthoun [$_{F}$ **MERIKI FILI**]
will come-3pl some friends-nom
'Some friends will come'

(53) a. Yiati oles autes i etimasies?
'Why all these preparations?'
b. Perimeno [$_{F}$ **KAPJON**] gia fagito.
wait-1sg/prog someone for dinner-acc
'I am waiting for someone for dinner.'

The fact that the existential quantifier in (53) is odd as new-information focus is due to its limited potential to provide precise information in updating the information status of the utterance. It is also bad in preverbal position. Moreover, the *referential* use of an existential quantifier is limited to contexts such as questions, which presuppose a referential expression in the answer. Nevertheless, if the quantifier functions as an answer to an all-focus question (53), given the fact that it becomes more informative, it can also become much more acceptable.

3.4.3 Scope interactions between focus and other operators

The third argument for the distinction between two types of focus with different interpretive choices comes from É. Kiss's test D, which indicates that only identificational focus takes wide scope since only this focus expresses exhaustive identification. This characteristic of exhaustive identification is exactly what makes the focus interact with other scope-carrying elements. Test D applied to Greek, involves examples where the universal quantifier takes scope over focus *in-situ* (54), and where *ex-situ* focus takes scope over the universal quantifier (55).

(54) Kathe sinadelfos ithele [$_{\mathbf{F}}$ me ton **DIEUTHINDI**] na milisi
every colleague-nom wanted-3sg with the director-acc to talk
'Every colleague wanted to talk with the director.'

(55) [$_{\mathbf{F}}$ me ton **DIEUTHINDI**] ithele na milisi kathe sinadelfos
with the director-acc wanted-3sg to talk every colleague-nom
'Every colleague wanted to talk with the director.'

According to É. Kiss, a similar example in Hungarian would induce two different interpretations. Thus, the Hungarian counterpart of (54) indicates that every colleague wanted to talk with one person, the director, and not with any other relevant person. Thus, the universal quantifier takes scope over the exhaustive identification. On the other hand, the Hungarian counterpart of (55) indicates that the director is the only person all of the colleagues want to talk to and that other people were talked to by a subgroup of colleagues but not all of them. Thus, the exhaustive identification takes scope over the universal quantifier.

In contrast to the situation in Hungarian, native speakers of Greek perceive no difference with respect to the propositional content of the sentences in (54)-(55). That is, these sentences both have the same truth value, namely that all the colleagues wanted to talk to the same person and nobody else. Moreover, none of the sentences prohibit the possibility that some colleagues wanted to talk to some other person apart from the director. Naturally, the focused phrase carries no property of exclusion, therefore no exhaustive interpretation. In this sense, there is no real scope-taking difference with respect to exhaustivity and the universal quantifier; quite the opposite, the focused phrase has the properties of an ordinary focused nominal argument, rather

than an operator having scope properties. Note, though, that some scope possibilities are manifested when the quantifier *mono* 'only' is added to the sentence. In this case, the meaning of the examples is similar to the ones in Hungarian:

(56) UNIVERSAL QUANTIFIER >> EXHAUSTIVE IDENTIFICATION

kathe sinadelfos ithele *mono* [$_{F}$ me ton **DIEUTHINDI**] na milisi
every colleague-nom wanted-3sg only with the director-acc to talk
'Every colleague wanted to talk only with the director'

(57) EXHAUSTIVE IDENTIFICATION >> UNIVERSAL QUANTIFIER

mono [$_{F}$ me ton **DIEUTHINDI**] ithele na milisi kathe sinadelfos
only with the director-acc wanted-3sg to talk every colleague-nom
'Every colleague wanted to talk only with the director'

Thus, Kiss's claim that identification focus takes scope relevant to its exhaustive interpretation cannot be maintained for Greek.

Another problem appears when considering the scope effects of focus in the sentence. Recall in É. Kiss (1995a, 1995b, and 1998) that part of the argument that focus-*in-situ* differs from constructions involving movement is that it is not quantificational. First, it does not change the truth conditions of the sentence; and second, it does not involve (semantic) uniqueness. É. Kiss (1995a, b) illustrates this by comparing cleft sentences with focus-*in-situ* sentences but the same tests may be applied to the difference between focus-*in-situ* and focus movement. The crucial tests for identifying the quantificational nature of focus come from Szalbolcsi (1981), who shows that the displaced focus in Hungarian does have quantificational force and does change the truth values of the sentences because it implies uniqueness.

However, consider the following examples in (58):

(58) a. Tegnap este [$_{F}$ **MARINAK**] mutattam be Pérert
last night Mary-dat introduced I.Perf Peter-acc
'It was **to Mary** that I introduced Peter last night'

b. Tegnap este be mutattam Pétert [$_{F}$ **MARINAK**]
'Last night I introduced Peter **to Mary**'

(É. Kiss 1998, ex. 5)

With respect to interpretation the two cases differ. In (58a), the immediately preverbal focus expresses exhaustive identification (in É. Kiss's terms); this sentence indicates that of the set of individuals present in the in the domain of discourse, it was Mary and no one else that I introduced to Peter last night. On the other hand, the postverbal focus *Mary* in (58b), does not suggests that Mary was the only one of a set of relevant persons that I introduced Peter to last night (again according to É. Kiss's account of exhaustion of identification); it merely represents new information focus.

The truth is that whatever the interpretative differences between (58a) and (58b), there is no difference in the truth conditions of these sentences. The fact that distinct structural positions are involved and that these examples are not simply two optionally available variants does not mean that there is a difference in their propositional content (cf. also Alexopoulou 1999). According to Krifka (1992) and Vallduví (1992), identificational foci assimilate to informational foci; they both have the same semantic structure, since in general focusing of a constituent does not add to the semantic content of the sentence; it figures only in its information structure. This is an important fact in arguing for the dissociation of information structure from semantics (recall Chapter 2: 2.6.3). Krifka (1992) further assumes that the difference between these sentences lies only in the illocutionary operator that binds them. The same phenomenon is attested in Greek Topicalization/CLLD, as shown in (59):

(59) a. Amfivalo oti klidose [$_{F}$ tin **PORTA**]
doubt-1sg that locked-3sg the door-acc
'I doubt that (he) locked the door.'
b. tin porta amfivalo oti [$_{F}$ tin **KLIDOSE**]
the door-acc doubt-1sg that it-cl locked-3sg
'The door, I doubt that (he) locked it.'

Here, again, the two constructions differ in their interpretations, but this difference does not affect their propositional content. The lack of a truth-conditional difference thus provides further proof of the non-quantificational nature of focus.

To conclude this section, with respect to the semantics of focus, it appears that in Greek both *in-situ* and *ex-situ* focus constructions can be interpreted as either new information or exhaustive listing focus, and that the type of focus is entirely

determined by context, in other words, pragmatically determined. This is confirmed by the fact that Kiss's predictions are not borne out for Greek. On the basis of both the English and the Hungarian facts we conclude that, although Kiss's approach uncovers some interesting facts concerning the semantics of focus, the view that there is a direct correlation between the morphosyntax of focus and the semantics of focus cannot be maintained in Greek, at least with respect to the encoding of the exhaustive interpretation.

3.4.4 Exhaustivity, Focus and Wh-questions

This section provides evidence in claiming that Greek *ex-situ* and *in-situ* foci can also be interpreted as new information foci. I will discuss a major test for indentifying new information and examine its relation to exhausitvity, in line with Gryllia (2009). The most common test in the literature for identifying new information focus is the *wh*-question/answer pair test. This test is based on the definition of new information focus as the part of the sentence that answers the relevant question in a question/answer pair (cf. Dik 1978; Büring 1997; Kadmon 2001, a.o.)

An illustration of new information focus is given in (60). The wh-question in (60a) requires an answer with focus on the subject. In (60b) the subject is in focus, as indicated by the brackets, and the question/answer pair is congruent. In contrast to (60b), in (60c) the focus is on the object and the answer is infelicitous. Example (60) shows that the wh-question imposes a restriction on the focus of its answer.

(60) **SUBJECT FOCUS**

a. Pjos ekopse ta dendra;
   Who cut the trees?

b. [$_{\mathbf{F}}$ i **GEITONES**] ekopsan ta dendra
   the neighbours-nom cut-3pl-PS the trees-acc
   'The neighbours cut the trees'

c. * i geitones ekopsan [$_{\mathbf{F}}$ ta **DENDRA**]
   the neighbours-nom cut-3pl-PS the trees-acc
   'The neighbours cut the trees'

The pattern in (60) is hardly any news. The issue here is whether the wh-question may be interpreted as inducing an exhaustive or a non-exhaustive answer.

Consider the following context. You are organizing with a friend a trip to Paris and you want to make reservations for Eurostar. Thus, you ask your friend.

(61) a. Pioi tha erthun telika?
Who-nom will come.3pl eventually?
'Who will eventually come?'
b. [$_F$ o **NIKOS** i **KOSTAS** ke i **ELENI**] tha erthun.
The Nikos-nom the Kostas-nom and the Eleni-nom will come.3PL
'Nikos, Kostas and Eleni will come'

The question in (61a) is interpreted as asking for an exhaustive answer and the answer in (61b) is indeed an exhaustive answer. You need to know the exact number of people joining the trip and if there was someone else coming then the answer should have mentioned it. According to Gryllia (2009), there is another term that is used in the literature for these types of answers, namely, the *mention-all* answers; mention-all in the sense that all participants relevant for the situation should be mentioned. In the specific example, everybody who is coming to the trip should be mentioned.

Let us now look at a case where the question cannot be interpreted with the exhaustive reading. You are looking for a spare button for your new coat. You are asking a friend:

(62) a. Pios poulaei koubia gia palto?
Who-nom sell-2sg buttons-acc for coat-acc
'Who sells buttons for coats?
b. [$_F$ to **JOHN LEWIS**] stin Oxford Street poulaei o,ti koubia theleis
The John Lewis-nom in Oxford Street sell-3sg any buttons-acc want-2sg
'The John Lewis in Oxford Street sells any buttons you want'

The question in (62a) does not require an exhaustive answer; the speaker needs to know one place where to find buttons, possibly the most relevant or accessible. Hence, the answer is not expected to be exhaustive. What examples in (61) and (62) show is that wh-questions can be interpreted as asking for an exhaustive or a non-

exhaustive answer, (61b) is an exhaustive answer, while (62b) is a non-exhaustive answer. The answer in (62b) can also be called a mention-some answer, in the sense that is sufficient, if it mentions only one or some of the places that sell buttons.

So, the question is: what exactly makes the two readings different, or in other terms how is exhaustivity subsubtantiated? One logical conclusion is to say that exhaustivity is induced directly from the semantics of the wh-question, as in (61a). This would leave though the answer in (62) unaccounted for because we would have to assume that some part of the answer in focus receives an exhaustive interpretation, which is not true (cf. Gryllia 2009).

Gryllia (2009) argues that the possibility of a *mention-some* answer to a wh-question as in (62b) shows that exhaustivity is a property of pragmatics. Hence, in her view such contrasts between (61) and (62) can be accounted by the Gricean conversational *Maxim of Quantity*. The Maxim of Quantity is stated in (63):

(63) **Maxim of Quantity** (Grice, 1975)

a. Make your contribution as informative as is required for the current purposes of the exchange.

b. Do not make your contribution more informative than is required.

In examples (61) and (62), the speakers are cooperative and make their contributions as informative as required by the situation. Example (61) provides an exhaustive list of people that are coming to the trip, while (62) mentions only one the most relevant place where one can buy buttons.

It is not certain to me whether Gryllia's explanation is on the right track. The Maxim of Quantity (Grice, 1975) is a universal maxim which regulates discourse coherence and felicity and although tempting as an explanation, the exact conditions of the correlation between quantity of information and exhaustivity are in this context; it seems that there are no neat statements with respect to that. Grice's view involves inferential pragmatics, whereas exhaustivity is a semantic notion.

However, the fact that wh-questions can be interpreted as asking for an exhaustive or a non-exhaustive answer is, in my view, quite right. This means that exhaustivity can be controlled when using the wh-question/answer pair test by inserting a mention-some expression in the question. The presence of a mention-some expression in the question allows the speaker to give a non-exhaustive answer.

A piece of evidence is presented below: In (64a), the mention-some expression *metaksi alon* 'among other things' (cf. Groenendijk & Stokhof 1984) makes the question to be interpreted as requiring a non-exhaustive answer. This means that the answer to the question in (64a) is expected to be a non-exhaustive answer.

(64) a. Ti harise metaksi alon o Yanis stin Ilektra?
what give.3sg among others-gen/pl the John-nom to.the Ilektra-acc
'What did John give to Ilektra among other things?'

b. *Answer1*
harise [$_{F}$ ena **VIVLIO**] stin Ilektra.
give-3sg a book.-acc to.the Ilektra-acc
'John gave a book (among other things) to Ilektra.'

c. *Answer 2*
[$_{F}$ ena **VIVLIO**] harise stin Ilektra.
a book-acc give-3sg to the Ilektra-acc
'A book, among other things, Haris gave to Ilektra.'

(examples adapted from Gryllia 2009: 11-12)

The question in (64a) can be answered in two ways; the focused object may appear in postverbal (64b) or in preverbal position (64c). In both positions, the focused direct object is interpreted as non-exhaustive, new information focus.

On the other hand, if the mention-some expression is not included in the question, then the question in (65a) is interpreted as requiring an exhaustive answer. This means that in (65b) and (65c), the focused object is interpreted as exhaustive.

(65) a. Ti harise o Yanis stin Ilektra?
what give.3sg the John-nom to the Ilektra-acc
'What did John give to Ilektra among other things?'

b. *Answer1*
Harise [$_{F}$ ena **VIVLIO**] stin Ilektra.
give-3sg a book.-acc to the Ilektra-acc
'John gave a book to Ilektra.'

c. *Answer 2*

[$_{F}$ ena **VIVLIO**] harise stin Ilektra.

a book-acc give-3sg to the Ilektra acc

'A book, Haris gave to Ilektra.'

In conclusion, in this section it was shown that the exhaustive interpretation of an answer to a wh-question is an effect of pragmatics. This effect was controlled for, by inserting a mention-some expression in the question. This resulted into a modified wh-question/answer pair test for identifying new information focus. This test indicated that Greek preverbal and postverbal foci can be interpreted as new information foci and are not necessarily exhaustive. This finding shows that preverbal and postverbal foci in Greek do not differ with respect to exhaustivity.

3.4.5 On Contrastive Focus

In this section, I examine the second property of identificational focus; the property of contrast. The first test that identifies contrast is the simple *correction* test. The following question in (66) is a yes-no question. Both answers in (66a) and (66b) are felicitous answers for question (61). The focused object is found in the preverbal position in (66a) and in the post-verbal position in (66b). Both objects can be interpreted contrastively.

(66) Protimas krasi?

Prefer-2sg wine-acc

Do you prefer wine?

a. Ohi, [$_{F}$ **BIRA**] protimo

No beer-acc prefer-1sg

'No, I prefer beer.'

b. Ohi, protimo [$_{F}$ **BIRA**]

No, prefer-1sg beer acc

'No, I prefer beer.'

Let us look now at a slightly modified question which indicates a choice/selection among two things and see how contrastive focus is encoded in this case:

(67) Protimas krasi i bira?
Prefer-2sg wine-acc or beer
Do you prefer wine or beer?
a. [$_{F}$ **BIRA**] protimo
beer-acc prefer-1sg
'I prefer beer.'
b. protimo [$_{F}$ **BIRA**]
prefer-1sg beer-acc
'I prefer beer.'

Again both positions - preverbal and post-verbal - are felicitous answers to the question in (67) showing that they do not differ with respect to contrast; in both position the object is interpreted contrastively.

Having shown in simple tests (66) and (67) that contrastive focus can be either preverbal or postverbal, the question that still surfaces is whether preverbal focus *must* be interpreted contrastively (in accordance with Tsimpli 1995, 2005, Baltazani 2002, Alexopoulou 1999, Roussou & Tsimpli 2006, Tsiplakou 1998). Let us look at the following example displaying a discontinuous focus structure in (68):

(68) Pios epline to autokinito? o Nikos?
Who-nom washed-3sg the car-acc the Nikos-nom
'Who washed the car? Nikos did?'
a. Den ksero, pandos [$_{F}$ o **YIORGOS**] epline [to mihanaki]$_{CT}$
not know-1sg, though George-nom washed-3sg the motorbike-acc
b. Den ksero, pandos [to mihanaki]$_{CT}$ to epline [$_{F}$ o **YIORGOS**]
not know-1sg, though the motorbike-acc cl-it washed-3sg o Giorgos-nom
'I don't know, though George washed the motorbike'

In (68) the question is not answered directly but rather through a discontinuous structure which includes a contrastive focus *o Yiorgos* and a contrastive topic *to*

mihanaki.[96] There is no difference in the acceptability of the sentences. Recall that according to Rooth (1992) -discussed in Section 3.3.1- contrastive focus indicates the existence of a contextually salient explicit set of alternatives (also indicated by the pitch accent on the contrastively stress constituent Bolinger 1961, Rooth 1992 discussed in section 3.3). Both answers in (68) are felicitous; the only difference is that the first answer (68a) is preferred. In (68a) the focused subject is found preposed in the preverbal position. This preposing is reminiscent of a discourse strategy in which the speaker prefers to answer the sentence going 'person by person' 'who washed what?' This strategy of 'focus marking' is more relevant for the context question in (68). In (68b) the speaker prefers to answer using a different strategy going by 'vehicle to vehicle' '*which vehicle did Nikos wash*?' / '*what vehicle did George wash*?' etc. This is a case of contrastive topic marking (Büring 1997, 2003). Choosing this strategy the speaker implicitly states that there are other relevant vehicles and that the question in (68) is a sub-question of a superset question probably on the lines of '*who washed the different motor vehicles in the garage*'. In Chapter 5, I will provide a full account for the above cases based on Vallduví's (1992) and Büring's (1997, 2003) notions of information structure.

What the above explanation reveals is that contrastive focus may be preverbal or postverbal but need or must not be obligatorily in any position. Speakers' preference on (68a) as opposed to (68b) is a pragmatic effect which can be contributed to speakers' strategies to 'encapsulate' information based on contextual considerations.

Summarizing, I provided evidence showing that the semantic manifestations of focus are not syntactically encoded in a direct and unambiguous fashion in Greek (contra Kiss 1998). The different spell-out positions of focus - pre-verbal or post-verbal - do not differ with respect to the semantic notions of exhaustivity, contrast and information focus, contrary to cartographic approaches of the left periphery. Instead, I argue, in the lines of Rooth's (1992) semantic theory, that focus in Greek is uniform, always expressing non-presupposed information evoking a set of implicit or explicit alternatives. The choice of a certain interpretation among positions is a pragmatic/discourse effect which can be attributed to speaker's strategies to encapsulate or package information based on their contextual considerations.

[96] Contrastive topics will be discussed in Chapter 5: 5.4.1.3.

The above facts empirically substantiates the S-IS underdeterminacy hypothesis suggested in Chapters 1 and 2 and quite crucially they provide support for claim that the encoding of focus interpretation in Greek cannot involve a strict syntactic, cartographic approach (Chapter 2: 2.4).

Nevertheless, an important question that emerges from the above discussion: Given that the semantic types of focus interpretation in Greek are not syntactically encoded in a rigid fashion but they rather enjoy a flexible distribution, namely, they are encoded as optional variants in both *ex-situ* and *in-situ* postions, the question that immediately comes to one's mind is the following: if there are languages such as Greek, which use different strategies to mark focus (*ex-situ* and *in-situ*, a.o), how can these strategies be justified given conceptual issues of optionality and economy of operations (Chomsky 1995 and later, Reinhart 1995, 2006, Fox 2000). In other words, how and why does the grammar of a language permit optional variants? In the following sections, after I present a survey of the strategies that languages use to encode focus, I will address these issues.

3.5 Focusing Strategies across Languages

In Chapter 1, section 1.2, I presented a typology showing the means (or constructions) that languages use to encode focus interpretation. Evidence from across and within languages showed that focus interpretation is encoded by a range of variable means, i.e. morphosyntactic and phonological. I highlighted the fact that languages handle focus interpretation in the following ways: (a) focal stress/prosody, (b) syntactic/cartographic, (c) morphological, (d) more than one mechanism within a construction, (e) multiple ways of marking focus within the same language. Below, I present this survey in more detail and I highlight some important theoretical and empirical considerations:

a) Focal stress/prosody

Intonation, the assignment of main stress is a well-known marker of information structure. As already shown, English is one of the most typical examples where focus interpretation is encoded prosodically as in the following example (69), where the nuclear pitch accent on the primary stressed syllable marks the focus of the sentence

(cf. Chomsky 1971, Jackendoff 1972, Rochemont 1986, Selkirk 1984, 1986 Ladd 1996, Cohan 2000 a.o).

(69) A: Who gave the flowers to Mary? *English*
B: [$_{F}$ **JÓHN**] gave the flowers to Mary.

It is not just English though that encodes focus prosodically. In most European languages, for instance, the focused item of the sentence is associated with the main sentence stress. Consider the following example from Spanish:

(70) a. Qué escribió la maestra? *Spanish*
what wrote the teacher
"What did the teacher write?"
b. la maestra escribió [$_{F}$ el **LÍBRO**]
'the teacher wrote the book'

In languages such as the above the assignment of main stress occurs rightmost, i.e. nuclear stress falls on the most embedded constituent. There appears to be a correlation between main stress and neutral context, that is, stress assignment compatible with a neutral focus interpretation, as in (71), and frequently between main focal stress and the *in-situ* strategy, i.e. the position where the focused constituent receives the stress without resorting to any syntactic rearrangements (72).

(71) A: What happened? *English*
B: [$_{F}$ John bought the **NÉWSPAPER**]
(72) A: What did John buy?
B: John bought [$_{F}$ the **NÉWSPAPER**]

b) Syntactic (focus fronting)/ cartographic

We already saw how languages can use syntax (word order) to encode focus interpretation (Chapter 2). The most typical example in the literature of the syntactic encoding of focus is the Hungarian focus construction. We saw already that Hungarian has a special position for focused element(s) that appears in the left periphery of the clause, immediately adjacent to the finite verb (73).

(73) a. Anna felhívta Sándor *Hungarian*
Anna VM-called Alex-acc
'Anna called Alex'.
b. Anna [$_{F}$ **SÁNDOR**] hívta fel
Anna Alex-acc called VM
'It is Alex whom Anna called.'

The focused constituent is assigned a pitch accent, and receives only an identificational or exhaustive interpretation (cf. É. Kiss 1998 discussed in this Chapter).[97] Similarly, in Italian, many studies have assumed that two different grammatical categories of focus exist which are encoded via different focus strategies: a contrastive (exhaustive) focus and information focus (Donati and Nespor 2001, Benincà and Poletto 1999, Belletti 2001, Zubizarreta 1998, etc). We saw already in this Chapter, that according to the above literature a contrastive focus moves to a syntactic position (either overtly or covertly) to the left and has operator-like properties; an information focus stays in situ and does not have operator-like properties. Examples of the two foci in Italian are given below:

(74) a. Che cosa ha vinto Gianni? *Italian*
'What did Gianni win?'
b. Gianni ha vinto [$_{F}$ la **MEDAGLIA**].
Gianni has won the medal
'Gianni won the medal'
c. ?? [$_{F}$ La **MEDAGLIA**] ha vinto Gianni.
the medal has won Gianni
'It was the medal that Gianni won'

(75) a. La coppa, l'ha vinta Gianni.
'As for the cup, Gianni won it'
b. No, Gianni ha vinto [$_{F}$ la **MEDAGLIA**].
'No, Gianni won the medal'

[97] The syntactic encoding of focus is evident in analyses for Italian (Rizzi 1997, 2004), Catalan (Vallduví 1992; Vallduví and Engdahl 1996a, b), but also English (Rochemont 1986; Rochemont and Culicover 1990; Rochemont 1998), Spanish (Zubizarreta 1998), Hungarian (Horvath, 1986; Kiss 1998), Greek (Tsimpli 1995; 1997), Hindi (Kidwai 2000).

c. No, [$_{F}$ la **MEDAGLIA**] ha vinto Gianni.
'No, it was the medal that Gianni won'

However, other analyses such as Brunetti (2003) Samek-Lodovici (2005) do not agree to this view. Brunetti (2003) shows that that information focus cannot also move. She claims that the apparent unacceptability of preverbal focus in (74c) depends on the question-answer context in which a focus occurs when it expresses 'plain' new information, and does not depend on focus itself.

Moreover, Samek-Lodovici (2005, 2006) reduces focus fronting/movement and focus *in-situ* to a single analysis, a right dislocation analysis. He claims that these patterns are actually instances of rightward focus followed by right dislocation. They are purely descriptive terms characterizing structures where right dislocation is word order vacuous, giving the impression of focus fronting and focus *in-situ*. Characteristically, Samek-Lodovici (2005, 2006) explains why Italian shows so much variation in the expression of contrastive focus, as in (76), as opposed to languages that retain the expression of focus either to the *in-situ* version (English) or to clause peripheral positions (Hungarian). He accounts for the instances of focus in (76) under a uniform analysis whereby it is argued that non-final focus is always the side effect of the independent operation of right dislocation applied to the post-focal material.

(76) Context: Avete dato al vincitore [$_{F}$ una **MAGLIETTA**]? *Italian*
Have (you)given to-the winner a T-shirt
'Did you give the winner a T-SHIRT?'
a. No. Abbiamo dato al vincitore [$_{F}$ una **MEDAGLIA**]
No. (We) have given to-the winner a medal
'No. We gave the winner a MEDAL'
b. No. Gli abbiamo dato [$_{F}$ una **MEDAGLIA**], al vincitore
No. (We) to-him have given a medal, to-the winner
'No. We gave the winner a MEDAL'
c. No. [$_{F}$ Una **MEDAGLIA**] abbiamo dato al vincitore
No. A medal (we) have given to-the winner
'No. We gave the winner a MEDAL'
(example from Samek-Lodovici 2006:1)

I will discuss the aforementioned analyses in more detail while the discussion continues.

c) Morphosyntax/focus markers

Lastly languages use morphological means to encode focus. African and Asian languages, for example, often use morphological markers, focus particles, to realize discourse functions (cf. also Ouhalla 1997, 1999 on Arabic; Drubig 1997; Tuller 1995; Rebushi & Tuller 1999 on Chadic languages; Gill & Tsoulas 2003 on Korean, among others). Morphological marking of focus is also attested in Navajo (Vallduví and Engdahl 1996b), and a number of Bantu languages (Watters 1979; Odden, 1984; Hyman and Watters 1984). Below, I repeat the examples from the typological overview in Chapter 1. In the Korean example (77) the morphological focus marker (FM) *nun* appears on the right of the focused constituent. In (78) the FM *á* appears on the left of the verb Gùrùntùm (West Chadic). The FM in the Hausa example in (79) is a non-verbal copular focus marker, which agrees in number and gender with the left-adjacent focused constituent (*nē*/*cē*/*nē* m/f/pl).

(77) Chelswu-ka [$_F$ **YOUNGHEE-NUN**] coahanta *Korean*
Chelswu-nom Younghee-FM like
'It is **Younghee** that Chelswu likes'
(example from Gill & Tsoulas 2003)

(78) [$_F$ **Á HÀFSÁ**] bà nyòolí gyòo-i. *Gùrùntùm (West Chadic)*
FM Hàfsá PROG write message-DEF
'Hafsa is writing the message.'
(example from Hartmann & Zimmermann 2009)

(79) a: Wa$_i$ kukà ganī t$_i$ à kāsuwā? *Hausa*
who 2pl.FOC.PF see at market
'Who did you see at the market?'
b: [$_F$ **YĀRÒNKÀ$_I$ (NĒ)**] mukà ganī t$_i$
boy.of.2m (FM.m) 1pl.FOC.PF see
It was **your boy** we saw'
(example from Jaggar & Green 2003)

d) **More than one mechanism within a construction**

Quite often though, the encoding of focus is not just the outcome of a single grammatical means. On many occasions, different levels of grammar may 'conspire' together for the encoding of a certain interpretation.

One of the most well-known interactions between different levels of grammar for the encoding of a particular focus interpretation is the interaction between syntax (word order) and prosody (stress). One of the earliest assumptions in the prosodic encoding of focus was Jackendoff's (1972) observation that focus phrases are prosodically more prominent than non-focused ones. The idea that focus is universally marked by pitch accent in stress languages is reflected thereafter in the discourse-phonological constraints and rules proposed in theories of focus: Selkirk's (1995:555) *Basic Focus Rule*: An accented word is F(ocus)-marked, Schwarzschild's (1999: 173) requirement of *Focus*: A Focus-marked phrase contains an accent, Samek-Lodovici's (2005:7) *Stress-Focus constraint*: A focused phrase has the highest prosodic prominence in its focus domain, [98] Zubizarreta's (1998:21) *Focus Prominence Rule*, Truckenbrodt's (1995:11) *Focus constraint*, Reinhart's (1995:65) *Focus Interpretation Principle.*

Under the above constraints, the condition that focus be stressed requires that the focused constituent and main stress be matched with each other, forcing quite often in several languages, one or the other to abandon their canonical position. For instance, it is well known that languages differ in whether or not they show non-canonical constituent order in cases of subject focus. More typical is the example of Romance languages which, as opposed to English, are well known in that they show a non-canonical constituent order in cases of subject focus (Vallduví 1992, Ladd 1996, Zubizarreta 1998, Büring & Gutierrez-Bravo 2002, Samek-Lodovici 2005, Brunetti 2003, a.o). For example, when the subject is focused, either the subject preserves its canonical syntactic position and stress shifts leftwards causing re-arrangement in the canonical prosodic phrasing, as in the English example in (80d) below, or main stress preserves its canonical rightmost prosodic position and the subject occurs clause finally, as in the Spanish sentence in (81d), where the canonical VSO order (81b) answering the question '*what happened*?' turns into VOS, so that the focus matches the position of stress.

[98] Also Féry & Samek-Lodovici 2006:135-6

(80) a. What happened? *English*

b. (John bought the **NEWSPAPER**)$^{\text{I-Phrase}}$ SV**O**

( ) (X)$^{\text{P-phrase}}$

c. Who bought the newspaper?

d. (**JOHN** bought the newspaper)$^{\text{I-Phrase}}$ **S**VO

(X)$^{\text{P-phrase}}$

(81) a. What happened? *Spanish*

b. (Ayer compró Juan el **PERIÓDICO**)$^{\text{I-Phrase}}$ VS**O**

( ) (X)$^{\text{P-phrase}}$

c. Who bought the newspaper?

d. (Ayer compró el periódico **JUAN**)$^{\text{I-Phrase}}$ VO**S**

( ) ( ) ( ) (X)$^{\text{P-phrase}}$

(examples adapted from Büring & Gutierrez-Bravo 2002)

Like Spanish, Italian also display subject inversion when the subject is in focus, as in the answer in (82b).The subject receives the main stress in the post-verbal position, which remains rightmost. Furthermore, if main stress remains rightmost the subject cannot occur pre-verbally as shown in the ungrammatical example in (82c) in Italian (cf. Samek-Lodovici 2005:12).

(82) a. Who won the race? *Italian*

b. L'ha vinta [$_{\mathbf{F}}$ **GIANNI**]

it-has won John

JOHN won the race

c. *[$_{\mathbf{F}}$ GIANNI] l'ha **VINTA**

John it-has won

Moreover, there are languages like German below which can sacrifice both the canonical pattern of prosodic phrasing (83a) and the canonical constituent order (83b) to bring a focused item in stress.

(83) a. Es wird…, dass (der **KANzler** den Aussenminister ernennt) **S**OV
(X)$^{\text{P-phrase}}$

b. Es wird …, dass (den Aussenmiister der **KANzler** ernennt) O**S**V
( ) (X)$^{\text{P-phrase}}$

'It is …., that the chancellor nominates the foreign-minister'
(examples from Büring & Gutierrez-Bravo 2002)

Hence, overall, in languages such as English and German (in part), prosody signals focus by means of segmental phrasing and prominence (main stress or pitch accent), as argued earlier in the section (Bolinger 1965, Halliday 1967, Jackendoff 1972, Ladd (1980, 1996), Gussenhoven 1984, Selkirk 1984, 1995, Erteschik-Shir 1986, Pierrehumbert and Hirschberg 1990, Steedman 1991, Vallduví 1990, Roberts 1996, Büring 1997; 2003, Schwarzschild 1999 a.o).

In calculating prosodic prominence, the notion of the nuclear stress rule (NSR) has played a very crucial role (influenced by early phonological work: Chomsky & Halle 1968, Halliday 1967, Chomsky 1972: 91 who defines focus as 'the phrase containing the intonation center', Cinque 1993, Reinhart 1995). In particular, in Reinhart's (1995) theory, the prosody of the utterance determines the possible foci of the utterance (following Chomsky 1971). Reinhart (1995, 2006) - who follows Cinque's NSR - and Neeleman & Reinhart (1998) argue that every language has a neutral, unmarked stress pattern, assigned by the NSR. In English, the result of the NSR is main stress on the rightmost constituent (see Chomsky & Halle 1968 a.o), i.e. on the object in a transitive construction, as in (84). A particular utterance, though, may have more than one focus interpretations, i.e. the focus set. Reinhart (2006:139) defines focus set as follows: 'The focus set of a derivation D includes all and only the constituents that contain the main stress of D'. The actual focus of the sentence is chosen from this set at the discourse interface. For example, the SVO English sentence in (84) with a default stress pattern has as focus set {IP, VP, DP} and the actual focus of the sentence is chosen from that set according to the context the sentence shows up in.

(84) a. A: What happened? *English*

B: [$_{\mathbf{F}}$ John bought the **NEWSPAPER**]

b. A: What did John do?

B: John [$_{\mathrm{F}}$ bought the **NEWSPAPER**]

c. A: What did John buy?

B: John bought [$_{\mathbf{F}}$ the **NEWSPAPER**]

If the focus set defined by the NSR does not contain the intended focus of the utterance, a special operation, a marked rule, may apply to place stress on the constituent in question.

(85) ***Marked rule****: Relocate main stress.*

(Neeleman & Reinhart 1998: 333, Ex.55)

The stressed subject in (80d) in English can serve as an example. According to Neeleman & Reinhart (1998) what is perceived as stress shift in (80d) is actually the result of two distinct prosodic operations: stress strengthening and destressing.[99] The former adds stress to an element that otherwise does not bear (main) stress. As a result, it is not in the focus set of the sentence. The latter removes stress from an element that bears main stress.

However, other languages which are also shown to mark focus by phonological means, do not always exploit the same type of phonological marking or the encoding of focus can rely on resolving a syntax-prosody conflict, as in the case of Romance discussed earlier. Resolving this syntax-prosody conflict in Romance is the task of an operation known in the literature as prosodically motivated movement or *p-movement* (Zubizarreta 1998, Szendröi 2001, Samek-Lodovici 2005). P-movement is suggested to arise when a conflict appears between the position of focus and the actual position of stress: in Spanish and Italian, for example, where stress appears to be rightmost, focus assignment and stress assignment can be in conflict when they do not coincide on the same position. Zubizarreta (1994, 1998) ties the position of clause-final focus in Romance to the position of main stress: focused phrases occur

[99] Neeleman & Reinhart (1998) assumed that destressing applies before the application of default stress assignment. Reinhart (2006) treats destressing as a local operation, while application of NSR applies 'globally' (to the whole sentence), so no precedence relation needs to be postulated.

rightmost rather than in their canonical syntactic position because focus needs stress and stress in these languages is rightmost She proposes that the non-focused part of the clause must somehow be 'scrambled' out its position, so that the focused constituent occupies the position where it bears the main stress. Typically, the VOS order in (81b) is derived from the VSO order (the basic order) by movement of the defocalized object *el periódico* out of the most embedded position so that the focused subject receives the main stress (Zubizarreta, 1998: 127).The movement operation is a last resort operation, triggered only if the subject needs to be focused and meet the position of stress. It is not feature-driven movement, rather prosodically-motivated movement; hence, the term *p*-movement.

Samek-Lodovici (2005, 2006), as already discussed earlier, offers a very interesting analysis of Italian focus which follows Zubizarreta's main insight that focus occurs rightmost in order to match the position of main stress and acquire the necessary prosodic prominence. This prosodically-driven analysis offers a uniform account of focus positions across the sentence, i.e. right peripheral, string-medial and left peripheral. More specifically, it is motivated by the syntactic status of post-focus constituents in Italian.[100] Samek-Lodovici (2006) shows that post focus constituents are right-dislocated outside the main clause. This result is used to show that Italian contrastive focus, including its clause-initial and clause-internal instances, always occurs rightmost in a sentence modulo right dislocation. The specific clause-external analysis he assumes maintains that dislocated items first move leftwards to the specifier of a topic projection TopP but are eventually stranded in rightmost position by leftward raising of the remnant IP. For example, the derivation of (86) below proceeds as in (87): first the dislocated object is raised to the specifier of TopP as shown in (87a), then the entire remnant IP raises to the specifier of a higher projection as in (87b), which he identifies as XP.

(86) [$_{\mathbf{F}}$ L'ho **VISTO**], Gianni *Italian*
(I) him have seen, John
'I SAW John' / 'I DID see John'

(87) a. [$_{\text{TopP}}$ Gianni$_i$ ø$_{\text{Top}}$ [$_{\text{IP}}$ l'ho **VISTO** t$_i$]]
b. [$_{\text{XP}}$ [$_{\text{IP}}$ l'ho **VISTO** t$_i$]$_k$ ø$_{\text{X}}$ [$_{\text{TopP}}$ Gianni$_i$ ø$_{\text{Top}}$ t$_k$]]

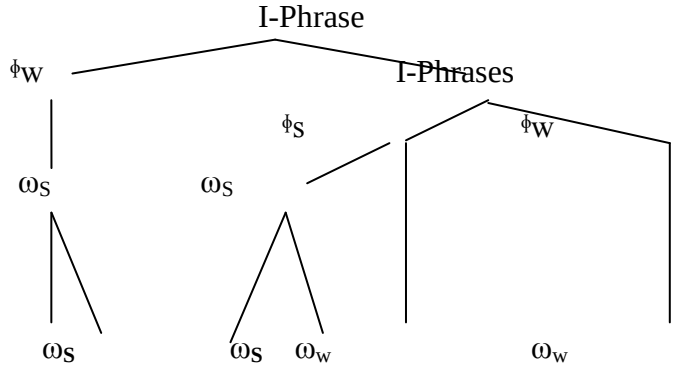
[100] He examines their properties with respect to binding, negative polarity licensing, clitic resumption, wh-extraction, and fragmental answers among others tests.

(Samek-Lodovici 2006: 4)

Samek-Lodovici's (2005, 2006) comprehensive analysis of Italian focus argues that the distribution of focus denies that the construction involves preposing altogether. He argues that the contrastive focus constituent in Italian (as well as presentational focus) is always in final position within the clause, due to requirements of prosody, and what creates the impression that contrastive focus has been preposed is only that the rest of the constituents appear in right-dislocated position.

Moreover, Szendröi (2001), building on Reinhart & Neeleman's theory, proposes that focus fronting in Hungarian is not feature driven, but it results from the need to align the focus phrase with the location where the prosodic component assigns the main prominence by means of its own independent mechanism: the focus phrase moves in preverbal position to receive the phrasal prominence assigned by the prosodic system of Hungarian invariantly to the leftmost element.[101] The following example in (88) illustrates her proposal (Szendrői 2001:50):[102]

(88)



[$_{FP}$ [$_{DP}$ A no$_i$ [$_{FP}$ [$_{DP}$ a kalapjat$_j$] vette [$_{VP}$ [$_V$ le t$_v$] tDP t$_{DP}$]]

the woman her cap-acc took off

'It was her hat that the woman took off (not her scarf)'

[101] Szendrői's (2001, 2003) proposal is not the only proposal in the literature concerning Hungarian focus movement and prosody. Horvath (2000) provides a reanalysis of her earlier work on Hungarian focus movement in the light of Reinhart's (1995) proposal that stress determines the focus of an utterance. She notes that in accordance with Reinhart's hypothesis, the fronted focused constituent in Hungarian bears main stress. She accepts Reinhart's view that it is this prosodic property that determines the focal interpretation of the constituent, rather than its position. She proposes that the movement of focused constituents in Hungarian is thus not actually driven by the fact that they are interpreted as foci. Rather, it is another distinctive characteristic of Hungarian focus that motivates the movement to the preverbal position: exhaustive identification.

[102] In general, languages that exhibit focus movement tend also to mark the dislocated constituent with nuclear stress (cf. Szendröi 2001, 2003; Horvath 2005; Zubizarreta 1998; Samek-Lodovici 2005; Costa 1998; Choi 1999; Kidwai 2000; Erteshik-Shir 2007).

Another language that uses word order and prosody to encode focus is English: word order in forming *Clefts* which typically put a particular constituent into focus, however, this focusing is also often accompanied by a special intonation on the focused element: the subject in the focus construction in (89): [103]

(89) *It was* [$_{\mathbf{F}}$ **JOHN**] who ate fish and chips. *English*

There are of course other interactions apart from those between syntax and prosody: syntax and morphology often interact within the same focus construction. Hausa, foe example, displays both displacement and the presence of a focus-marking morpheme within the same construction, as shown in (90):[104]

(90) [$_{\mathbf{F}}$**TEELÀ$_{\mathbf{I}}$ (NEE)**] Bintà zaa tà biyaa t_i *Hausa*
tailor FM Binta. FUT 3sg.f pay
'Binta will pay the TAILOR.'

e) Multiple ways of encoding focus within the same language:

So far, we have distinguished multiple ways of expressing focus across languages (points a, b and c). A further distinction involves multiple ways or strategies of encoding focus interpretation within the same language. We already discussed English in (69) and (89) where the language uses stress, clefting but also association with focus phenomena (even, only, etc) as in the following example:[105]

[103]In English, a cleft sentence can be constructed as follows: *it* + conjugated form of *to be* + *X* + subordinate clause, where *it* is a cleft pronoun and *X* is usually a noun phrase. The focus is on *X*, or else on the subordinate clause or some element of it.

[104] Other mechanisms can be lexical and cartographic in encoding focus. For instance, the case of *wh-movement* in French: wh-movement in French can stay *in-situ* or it can be moved but associated with a left-periphery projection (as claimed in Mathieu 2002, Bošković 2003 among others).

(i) a. Tu vois qui ce soir? *French wh in-situ*
you see who this evening
b. Qui$_i$ tu vois t_i ce soir ? *French wh-movement*
who you see this evening
'Who are you seeing tonight?'

[105] Certain semantic operators, including particles like only, also and even, contribute to the meaning of the sentence in ways that depend on the positioning of focal accent in the sentence, (Jackendoff 1972, Jacobs (1983), von Stechov (1991), Krifka (1991), Rooth (1985, 1992) among others).

(91) a. John [$_{VP}$ only [$_{VP}$ introduced $_{F}$ **BÍLL** to Sue.]]].
'The only person John introduced to Sue is Bill.'
b. John [$_{VP}$ only [$_{VP}$ introduced Bill to $_{F}$ **SÚE**]]
'The only person John introduced Bill to is Sue.'

Below are three examples from Hungarian (92), Catalan (93) and Finnish (94) respectively, where all three languages use both focus fronting and the *in-situ* strategy in encoding focus interpretation:

(92) a. Tengap este [$_{F}$ **MARINAK**] mutattam be Pétert *Hungarian*
Last night Mary-DAT introduced-I PERF Peter-ACC
'It was **to Mary** that I introduced Peter last night'
b. Tengap este be mutattam Pétert [$_{F}$ **MARINAK**]
Last night I introduced Peter TO MARY'

(93) a. [$_{F}$ **DEL CALAIX**] la Nuria (els) va truer els esperons *Catalan*
of the drawer the Nuria them has taken out the spurs
'It was **out of the drawer** that Nuria took the spurs'
b. La Nuria (els) va truer [$_{F}$ **DEL CALAIX**] els esperons
'Nuria took the spurs OUT OF THE DRAWER.'

(94) a. [$_{F}$ **ANNALLE**] Mikko antoi kukkia *Finnish*
Anna ADESS Mikko gave flowers
'It was **to Anna** that Mikko gave flowers'
b. Mikko antoi kukkia [$_{F}$ **ANNALLE**]
Mikko gave flowers TO ANNA

(examples from Kiss 1998)

Earlier in this Chapter, in section 3.4, I discussed the Hungarian encoding of semantic focus interpretation, as in (92), as opposed to Greek, as in (95):

(95) a. Ti ekopsan i geitones?
'what did the neighbours cut?'

b. i geitones ekopsan [$_{F}$ ta **DENDRA**]
the neighbours-nom *cut-3pl/PS* *the trees-acc*
'The neighbours cut the trees'

c. [$_{F}$ ta **DENDRA**] ekopsan i geitones
the trees-acc *cut-3pl/PS* *the neighbours-nom*
'The neighbours cut the trees'

I argued that in Hungarian each strategy serves a certain interpretive effect: there is a systematic correlation between the syntax and the semantics of focus in the language, in the sense that *ex-situ*/pre-verbal focus is expected to be exhaustive, while *in-situ*/post-verbal focus is expected to be new-information focus (Kiss 1998). However, as argued throughout section 3.4 in Greek there is no systematic correlation between the syntax and the semantics of focus: the semantic manifestations of focus are not syntactically encoded in a direct and unambiguous fashion. Hence, Greek seems to be a language that allows for a lot of flexibility in the encoding of focus.

Recall also that in Chapter 2: 2.4.1, I showed that the S-IS mapping underdetermines focus interpretation: a certain interpretation can be realized via multiple word orders. This is exactly where the discussion in section 3.4 led us to. By testing Kiss's (1998) cartographic outlook of encoding semantic types of focus and showing that Greek does not comply with this view, indirect evidence was provided in support of the S-IS underdeterminacy hypothesis: A certain interpretation (focusing context), say object focus, as in (95) above can be realized pre-verbally and post-verbally or even in sentence medial position carrying an information focus interpretation (answering a wh-question: *what did the neighbours cut?*) or carrying a contrastive interpretation (in a corrective/emphatic context: *did the neighbours cut the trees?*).

Hence, the focusing strategies available in the language are *optional* not only by virtue of being more than one but also because they are not predetermined or specified to serve a specific interpretive effect, and consequently, to respect *economy* considerations imposed by conceptual necessity. This is a problem for the theory that I will discuss in the following section.

3.6 Issues on Optionality in Focus Encoding

Crucially, issues concerning the presence of more than one of the above strategies in a given languages are the issues of optionality and consequently economy. Indeed, according to economy considerations (Reinhart 1995, 2006, Fox 2000) the different strategies shown above which are employed for each language to encode pragmatic functions need - by economy principles, rules or definitions defined by the grammar - to obey conceptual necessity, to be justified or at least motivated, e.g. the occurrence of a specific strategy has to be related with a specific semantic focus interpretation.

Furthermore, in Minimalism, to maintain an analysis of the language as a 'perfect' system respecting economy considerations we cannot allow for more than one means of achieving one and the same interpretive end. In simpler terms: If we follow the minimalist view that language is a perfect system designed to satisfy interface requirements in an optimal way, then if the language uses more than one focusing strategy, is each of them consistent with a distinct interpretive function, or are interpretive decisions driven by discourse/pragmatic constraints?[106]

It follows that since there are no interpretive differences between a derivation with a preverbal focus and one with an *in-situ* focus, then movement in the left-periphery turns out to be optional and what we end up with is two competing derivations. But this optionality is not admitted in Minimalism, as stated above; it is a clear violation of economy principles.[107] In particular, if (95b) and (95c) can be used in identical contexts, receiving exactly the same interpretation, then (95c) is problematic, as it would seem to violate the economy condition by being a 'costly' derivation that does not give rise to any additional interpretation. The studies that propose LF movement for focus *in-situ* (e.g. Rizzi 1997, Chapter 2: 2.6) do not give an explanation at all for the fact that there is both overt and covert movement within the same language. After all, LF movement is an uneconomical mechanism, as discussed in Chapter 2: 2.6.3.[108] Unless, of course, one tried to make the hypothesis

[106] It is clearly considerations along this nature that motivated approaches, such as that of Kiss (1998), which postulates distinct semantic functions of focus in an effort of achieving distinct interpretive goals in the syntactic domain.

[107] This problem does not concern only focus, but also wh-questions. There are languages like French in which both wh-movement and wh-*in-situ* are allowed, with no apparent interpretive difference between the two derivations. Cole and Hermon (1998) discuss these issues and offer a minimalist account for the (apparent) optionality of wh-movement in Malay.

[108] The same observations hold if one assumes that a low focus is checked via Chomsky's (2000, 2001) operation Agree (Chapter 1:1.3). It is not clear why in some cases the relevant operation, instead of Agree, should be Move, which is more complex. Some proposals discuss the option of feature-

that what we are dealing with are not two competing derivations but two different constructions, two different lexical entries whihc start with two different numerations.

In minimalism, parameters are not syntactic, but only lexical, namely the differences among languages do not appear in phrase structure, but in the lexicon. [109] The problem with this hypothesis is that, while trying to be minimalist, it turns out to be very complex. For instance, it could be possible to postulate the existence of two different focus morphemes: one that is just a variable and the other a combination of a variable and a null operator, according to Brunetti's (2003) tentative proposal for Italian. In the first case, the null operator is a lexical entry by itself, so the focused phrase is unselectively bound in situ by the operator; in the second case, the intonational morpheme is a unit together with the null operator, so it moves to the scope position of the operator with it. However such a proposal would be in total contradiction with the proposal that focus is a uniform grammatical object from an interpretive point of view (section 3.3 and 3.4).[110]

Hence, the existence of focus movement or any operation that carries 'cost' in a language has to account for a special interpretational pattern or a special phonological pattern not achieved otherwise. In other words, the language needs to provide internal evidence for the obligatoriness of costly or marked operations. Quite often, languages have structural means for ensuring economy of derivations and provide reasons for an obligatory vs. an optional operation. Consider briefly some case.

For example, English left-dislocated constituents often serve as topics (McCawley 1988; Ward 1988), though clearly, they are dislocated. Similarly, object–particle order is preferred with unaccented objects, while particle– object order is preferred with accented objects (Bolinger 1971; Chen 1986; Dehé 2000):

---

checking in situ, such as Simpson (2000), Frascarelli (2000), etc. If feature-checking can take place in situ, then why movement is necessary; no other more complex operation, that is Focus movement, should be possible, for economy reasons.

[109] Cole and Hermon (1998) make the hypothesis that in Malay wh-questions the difference between the two derivations - one with wh-movement and one without - is lexical. They propose that languages can have two types of lexical entries for the wh-word. One entry is the combination of a null operator and the wh-word. The wh-word functions as the variable the operator binds. Another entry is the wh-word by itself, and the operator is an independent lexical entry. In the first case, operator movement forces pied-piping of the wh-word; in the second case, the operator is base-generated in its scope position, so the wh-word can remain in situ, from where it is unselectively bound. According to Cole, the two wh-constructions start with two different numerations, and therefore, are not competing derivations.

[110] This is also pointed out in Brunetti (2003) who offers a similar analysis. Brunetti mentions additional problems of encoding two special lexical entries for focus in Italian which are not in direct relation to the current discussion.

(96) a. (What did Peter turn down?) He TURNED down the [$_{F}$ **RA**dio].
b. (What did Peter do with the radio?) He [$_{F}$ **TUR**ned] the radio [$_{F}$ **DOWN**].
(example from Büring 2007)

In Hungarian (Horvath 1986, Brody 1900), as in Turkish (Göksel & Özsoy 2000), narrowly focused elements have to occur in an immediately preverbal position. Moreover, as shown above in Szendrői's (2001, 2003) analysis Hungarian provides a strong reason for justifying movement of the focused constituent in the left periphery. She argues that focus movement in Hungarian is prosodically motivated; it targets a left-peripheral position because the main stress rule in Hungarian is leftward oriented. In contrast, main stress in Italian is rightward oriented, as it is in English. Due to the directionality of stress assignment, Samek-Lodovici's (2005, 2006) analysis predicting the rightmost position of focus in Italian based on the rightmost position of stress finds proper justification through a language internal property. Furthermore, in German (Müller 1998, Büring 2007) there appear to be some language internal restrictions, focused direct objects cannot precede unfocused indirect objects, though unfocused direct objects can precede focused indirect ones, among other examples.

Coming to Greek now, although different strategies have been proposed especially on the syntactic domain (cf. section 3.3), these strategies tend to be rather optional, since there is no internal language-specific evidence that we can only achieve an interpretive goal through only a certain morphosyntactic or phonological operation (for instance, by feature or stress-driven movement, as proposed in Haidou 2000, 2003 and Georgiafentis 2001). What we attested, on the contrary, discussing the interpretational effect of focus in section 3.4, is that the semantics of focus underdetermine the range of interpretational possibilities instead of narrowing down the interpretational possibilities. In this respect, the realization of contrastive information or exhaustive focus is not conditional upon the presence of either pre-verbal or post-verbal focus positions and not necessarily in exclusive relation to any of them.[111] Rather, there is a relative freedom - a relation of underdeterminacy - in the spell-out positions of a semantic focus type.

[111] To account for the correspondence between a contrastive interpretation and the high syntactic position in Italian, Belletti (2002), among others, proposes that a low contrastive focus moves to the high FocP and then remnant movement of the IP applies to an even higher position. The problem of

The challenge is that if one can work towards an analysis which endorses that each focusing strategy is ultimately related to a distinct interpretation in a given language, then we give support to the idea of language as a perfectly economical system in which optionality and redundancy issues are immediately eliminated. In contrast, in the case where the empirical facts prove the above hypothesis wrong or a speculation, then we are obliged to assume that optionality is permitted by grammar, i.e. syntactic component and by the interpretive components, i.e. the interfaces.

In what immediately follows, I will evaluate the discussion on sections 3.5 and 3.6, attempting to offer a ranking of strategies of encoding focus in terms of a scale of economy. In Section 3.7, I will argue that interpretive decisions are driven by discourse/pragmatic constraints. I follow Neeleman & van de Koot (2008) templatic model in arguing that in Greek focus movement as in (95c) is optional because it does not serve focus per-se but it facilitates a transparent mapping between syntactic constituents and constituents of the information structure. In other words, movement satisfies a pragmatic, information structure template, i.e. a focus-background structure (focus takes background as a complement at the level of information structure).

3.7 Economy Considerations: Ranking of Focusing Strategies

Building on from the above, here I attempt to offer a tentative ranking of focus strategies in terms of economy, focusing on those proposed by theories which have attempted to characterize the notion of economy, as discussed in the previous section.

According to Cinque (1993), nuclear stress falls on the most deeply embedded constituent in a sentence by default, by means of the NSR. It follows from this that the 'least costly' focus in a sentence is one which contains nuclear stress, as this requires no 'costly' re-assignment of stress, which is termed by Cinque the 'marked focus rule'. Reinhart (1995, 2006) builds upon these ideas to claim that re-assignment of stress (stress-strengthening or de-stressing) is uneconomical, and if a language can achieve focus on constituents not containing nuclear stress by other means than re-assignment of stress (such as scrambling), it will do so, as these operations are 'less

optionality however still remains, since it is not clear at all why a certain derivation needs remnant IP-movement after focus movement, and another derivation does not, given that Focus is contrastive in both cases.

costly' or marked. Although the process of trying to define a marked operation from a theory-internal perspective can be controversial, it is nevertheless possible to offer the following intuitive explanation: PF operations, being 'closer to the surface', are strongly prone towards generalisation (observe the consistency of prosodic processes), and more reluctant to allow exceptions. It follows from this, that syntactic operations such as scrambling are less costly than PF operations; a costly operation will only be licensed when it corresponds to a distinct interface goal (Reinhart 1995, 2006). In a similar vein, we saw that Zubizarreta (1998) claims that scrambling in Spanish is motivated by the need to arrange a constituent in nuclear stress position, by scrambling other constituents to a higher position. In other words, the grammar resorts to operations in the syntax in order to satisfy a PF constraint.

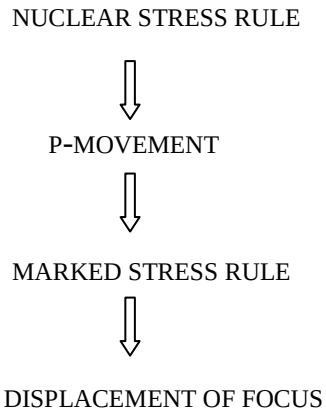
How is focus fronting though accommodated in this picture? Cinque (1993) and Reinhart (1995) do not examine focus fronting. Zubizarreta (1998:92), on the other hand, argues that in Germanic and Romance, the focus is prosodically licensed in statements, but syntactically licensed in questions. In other words, while prosody licenses focus in some instances, in others it is licensed by a feature checking mechanism[112]. The issue, of course, is how we might measure the 'cost' of focus fronting (amongst other cases of displacement to a designated focus position), bearing in mind that, in many cases, the movement operation is accompanied by relocation of main sentential stress to the fronted constituent.[113]

Trying to define costly operations in the grammar, assuming that cost is calculated by complexity and complexity by number of operations, a ranking of cost is projected in (97) starting from the least costly and advancing to the most costly operations:

[112] Consider evidence and discussion provided earlier in Section 3.5

[113] Szendröi (2001, 2003) following Reinhart (1995) argues that languages are parametrized with respect to focus marking in so far as they employ the marked rule, 'stress strengthening', which applies in English or a syntactic operation which applies to ensure that the element is in focus as in Hungarian (cf. Szendröi 1999) or the mapping between the syntactic and prosodic structure can be altered in such a way that the element in question appears at the relevant edge of the phonological domain to receive main stress. In Chapter 4, I show that the last option is compatible for marking focus in Greek.

(97)



In the first three operations in (64) focus is always related to main stress, either as the result of the NSR (least-costly), of scrambling to strand a constituent in NSR position (P-movement), or of the relocation of main stress to a non-NSR position (marked stress rule). The last and most costly operation involves syntactic displacement of the focused constituent which can be either related to main stress as in the case of Hungarian left-ward stress driven movement (Szendröi 2001) or the case of feature driven syntactic movement (Rizzi 1997) which is further related to a certain interpretation. Based on Chomsky (2000:101): 'Move is generally more complex than its subcomponents Merge and Agree, since it involves the extra step of determining P(F) (generalized pied-piping).

However, certain operations, such as clefting in English or focus fronting in Greek still raise some issues: given that the constituent moved to a designated syntactic position is prosodically marked (by main stress) in both cases, the question is what motivates the movement, and what is the economy status of such operations? These are not stress-driven movements. We need more comprehensive theorizing to account for these cases.

The combination of the approaches discussed in 3.6 can lead us to the following tentative prediction: a language will *not* permit two (or more) focus-equivalent constructions, since one will always be less economical than the other. In this sense, languages always ensure economy. Optional variants should then be attributed to distinct interface goals (cf. Chomsky 1995; Brody 1995; Reinhart 2006).

In what follows, I will look at a set of approaches or interpretive models of information structure which support the idea that optional variants are permitted

merely as a way of facilitating a transparent mapping from syntax to information structure.

3.7 Interface-based Models of Focus Encoding

Consequently, if we assume that a certain focus interpretation can be encoded *in-situ* in Greek, then the moved option, which results in the same interpretation, is the one that is conceptually redundant and more costly, especially if it results in the same interpration. Hence, the issue remains: how do we account for the optional focus variant, in terms of economy, provided that a language does not permit more than one focus-equivalent structures?

One way to answer the question is to implement the standard minimalist or Rizzian treatment of discourse related notions, as discussed in Chapter 2. However, as already discussed in Chapter 2 and in this Chapter, Greek does not readily comply with a syntactic treatment of focus.

The other way is to provide an explanation where discourse related linguistic notions are relevant only at the interface of syntax with the external systems of use. These linguistic concepts are not encoded in the computational system C_{HL}; they do not correspond to designated formal features (in the sense of Chomsky 1995) and functional projections in the syntax. Thus they are involved exclusively in 'discourse grammar', specifically, in the mapping of syntactic structures to information structure representations, and play no role in the C_{HL} deriving formal semantic representations. However, they interact with phenomena of the C_{HL} indirectly, via the interface, as is argued in work on interface strategies, such as Reinhart (1995, 2006), Zubizarreta (1998), Kucěrová (2007) and Neeleman and Van de Koot (2008), Horvath (2009).

The present study agrees in principle with the latter conceptualization of discourse notions. Discourse related notions, such as 'contrast', cannot drive syntactic movements under a feature specification, because no formal feature can encode the particular notion within the syntactic component (cf. also Chomsky 2001, 2002 on stylistic and *edge* phenomena); instead the movements involved are claimed to be induced by needs of the mapping to the relevant interfaces.

The above described conceptualization of the endoding of discourse related notions is firmly supported in Horvath (2009) in the Strong Modularity Hypothesis for Discourse Features stated in (98):

(98) *Strong Modularity Hypothesis for Discourse Features (Horvath 2009:4)*

No information structure notions – i.e., purely discourse-related notions – can be encoded in the grammar as formal features; hence no 'discourse-related features' are present in the syntactic derivation. They are available only outside the C_{HL}.

According to this Strong Modularity Hypothesis (98), no syntactic displacement can be driven by formal features encoding pure discourse notions (such as focus, topic, comment, givenness), contrary to common current practice in the cartographic tradition. Such purely discourse-related notions can play a role only in information structure representations. Obviously, deriving concrete empirical predictions from this hypothesis presupposes that it is possible to determine what counts as a purely discourse-related notion. What Horvath (2009) means by this term is a notion whose interpretation is not actively involved in the formal semantic interpretation of the sentence but only at the level of information structure. Specifically, they are neither truth-conditionally relevant features of lexical items, such as inflectional features of person or number of nominals, nor quantificational functional elements with truth-conditional effects active in formal semantics, such as generalized quantifiers, known to be non-referential, to exhibit scope interactions and WCO effects. Recall that in section 3.4.3, I argued based on examples (54) and (55) that focus turns out not to have a truth-conditional import to the propositional content of the sentence.[114] In Chapter 2 (section 2.4.4), I also provided arguments against the quantificational properties of focus. Both these properties -the non-quantificational and the non-truth conditional – are intrinsic to the information structure module, and cannot involve feature driven movement.

Based on what we saw in the syntactic feature-driven movement approaches in Chapter 2, these approaches are expected: (a) to be obligatory, i.e., to take place consistently whenever the particular feature appears in the clause, (b) to have a

[114] In Chapter 4, I provide further justification that focus is does not affect the propositional content of a sentence in NS based on prosodic evidence, i.e. stress assignment.

unique, fixed landing site in the structure, namely the Spec position of the functional head projecting the given formal feature, and (c) not to permit phrases lacking the relevant feature to occur in the same landing site.

In contrast, interface-licensed, i.e., non-feature-driven movements (such as Horvath 2009) would not be expected to display these properties. Instead, such non-syntactically motivated movements can be identified by exhibiting some of the following characteristics: (a) optional application, (b) multiple, rather than necessarily unique, landing sites, due to having no dedicated functional head projecting the feature that attracts the moved constituent, and (c) not necessarily a single uniform interpretive effect associated with a given landing site.

Neeleman and Van de Koot's (2008) analysis accounts for the optional focus movements, with multiple potential landing sites in Dutch, arguing that these represent directly interface-driven, rather than feature-checking movements. Neeleman & van de Koot's (2008) main working hypothesis is to show that discourse functions such as topic, focus and discourse-givenness show much more flexible distributional properties than Cartography implies, and on the other hand, that cartographic accounts cannot (at least in a straightforward manner) account for restrictions that arise when topics and foci co-occur in an utterance. In a nutshell, the main idea is that notions like topic, focus, discourse-linkedness are building blocks of an independent level of representation, part of the C-I interface. Possible word order rearrangements also happen on the Syntax-C-I interface, as a strategy that allows a transparent mapping on syntactic and information structural blocks.

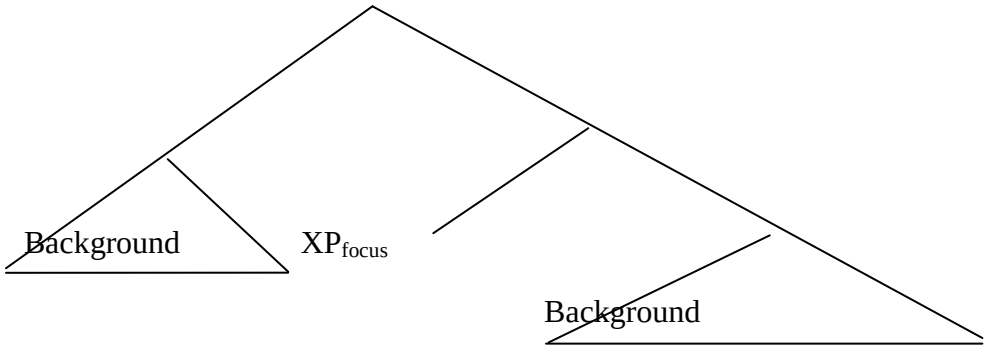
Based on the above, Neeleman and Van de Koot advance an interface-licensed, syntactically untriggered, conception of these movements. What licenses such movements according to their proposal is that they yield syntactic configurations matching the required input form of a mapping rule of information structure, a discourse template, that otherwise would not be able to apply. Let me explain what this means, with respect to focus.

As far as focus is concerned, the idea is that it is associated with a background that identifies the set against which the focus is evaluated (section 3.3, Rooth 1992, see also Büring 1997, 2000) and that this background is not necessarily a syntactic constituent, but may be composed of different constituents. This is the case in the example below:

(99) Mary bought a [$_{\mathbf{F}}$ **RED**] hat

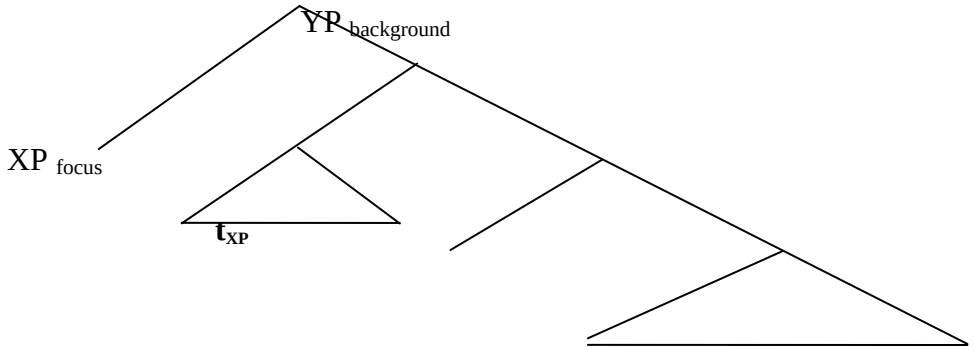
The representation in (100) illustrates this idea of discontinuity for focus:

(100)



With respect to that, Neeleman & van de Koot argue that foci movements (as well as topic movements) do not mark the discourse functions of these elements, but rather their comments and backgrounds. In other words, what movement of topic and focus achieve is to turn otherwise discontinuous comments or backgrounds into information structure constituents, rather than to license their interpretation as topic and focus. This is shown in (101) for focus:

(101)



Thus, the movement of focus will have a trigger if it matches the structural description of the mapping rule in (102) (based on Neeleman and Van de Koot, 2008 (9b) and (10)):

(102) *Background Mapping Rule*

If XP in (66) is interpreted as focus, then interpret N2 as background.

(103) [$_{N1}$ XP [$_{N2}$ ... t...]]

Let us see how the above mapping rule can work in Greek: If no syntactic movement applies, then in cases such as (104), the mapping rule (102) is inapplicable, and there is no trivial procedure that can convert the overt syntax of the contrastive focus and corresponding background into an information structure representation. Thus there is a trade-off in terms of derivational economy between the application of a syntactic movement and the simplicity of the mapping procedure needed.

(104) i Maria edose to vivlio [$_{\mathbf{F}}$ sto **YANI**] (ohi ston Petro)
the Maria-nom gave-3sg the book-acc to the Yani-acc not to the Peter-acc
'Maria gave the book to **John** not to Peter'

What licenses these syntax-internally untriggered movements is that their output enables a direct, transparent mapping of the syntactic representation of the clause onto InfoStructrure. Specifically, such a movement results in a partitioning of the clause to constituents corresponding to interpretive units of information structure. Thus, we can assume that the extraction of a contrastive focus phrase (no matter whether contrastive topic or contrastive focus) derives a syntactic constituent – the remnant of extraction – that corresponds to an open sentence; this is the expression that serves as the relevant domain of contrast at information structure. The movement has the effect of syntactically delineating the material based on which the set of alternatives is determined. Thus, it facilitates the mapping at the S-IS interface. The movement equivalent of (104) is presented in (105):

(105) [$_{\mathbf{F}}$ sto **YANI**]$_i$ i Maria edose to vivlio t_i (ohi ston Petro)
to the Yani-acc the Maria-nom gave-3sg the book-acc not to the Peter-acc
'Maria gave the book to JOHN not to Peter'

After Neeleman & van de Koot have presented their main working hypothesis, they go into a detailed comparison of this Templatic hypothesis and Cartography, highlighting the predictions their analysis makes and the problems that Cartography encounters. A first prediction has to do with the fact that only contrastive/exhaustive/corrective foci can move, simply because movement does not identify the focused constituent itself but rather its background. Thus, new-information foci cannot move because they lack a background, as it does not involve

selection of a subset out of a set of alternatives (in line with Kiss 1998 who shows that new information focus cannot move). However, as shown in section 3.4 this is not true for Greek. New information focus can also be found displaced in sentence initial or preverbal position. Based on the proposal in section 3.3, focus receives a uniform treatment: Alternative Semantics does not distinguish between new-information focus and contrastive focus. Alternative Semantics accounts for contrastive focus in the same way, as it accounts for focus by assuming that it always invokes alternatives in discourse: it is associated with a background that identifies the set against which the focus is evaluated. In this respect, new-information focus can also receive a templatic analysis in Greek.

Based on the above view, it follows that optionality in Greek is motivated by the fact that there is no formal feature-checking mechanism involved but is rather facilitated by an interface-based conceptualization of the grammar, under which the optional variants are licensed merely as a way of facilitating a transparent mapping to information structure (in line with Neeleman & van de Koot 2008).

Therefore, to answer the questions imposed in the introductory section but also in section 3.5, why focus dislocation occurs, if the *in-situ* option is available? Is movement optional? And if yes, why? I follow Neeleman & van de Koot (2008) assuming that focus movement is optional in Greek because it does not serve focus per se but it facilitates a partition of the clause into constituents corresponding to interpretive units of information structure. In this respect, it satisfies an interface related need, that otherwise would not be able to apply. Given that movement is not triggered for focus-related reasons, but rather for it to formally mark a comment, there is nothing in the NS that would be violated, if a focus or a topic remained *in-situ*. This is an important prediction of this analysis.

3.8 Minimalism and Discourse Functions

In Section 3.6, I attempted to offer a tentative ranking of focus strategies in terms of economy suggesting that languages ensure economy by *not* permitting two (or more) focus-equivalent constructions, since one will always be less economical than the other. A main implication of the interface-based approaches (Horvath 2009, Neeleman & van de Koot 2008) discussed in section 3.7, is that economy can be

further ensured if we preserve the autonomy of the computational system C_{HL} from the other components of the grammar, the information structure and the phonological component. This could potentialy be achieved if we constrain the discourse related notions from the feature checking mechanisms and the postulation of discourse related functional projections.

In this section, I would like to briefly weigh up the above view in light of Minimalist assumptions (Chomsky 2000, 2001a, 2001b and 2005), outlined in Chapter 1:1.3. It seems that the above view is fully compatible with Minimalist reformulations. In particular, Chomsky (2000) points out the difference between 'stylistic' operations and basic structure-operations, as shown above, proposing that 'stylistic' operations might occur at PC or PF rather than being part of NS. This analysis is also developed by Kidwai (2000) and reformulated in Erteschik-Shir (2000). Chomsky (2001a) further states that, while displacement in NS might generate semantic effects such as old/new information, displacement at PC must not. This idea can be taken to mean two things. First, it means that stylistic operations, such as focus movement, do not affect the semantics of the constructions that are dislocated for discourse reasons. Second, as Chomsky (2001a) also assumes that while, displacement operations performed in NS may affect the semantics of the outcome, they are not inherently driven by discourse/semantic features:

> "a 'dumb' computational system shouldn't have to access considerations of that kind, typically involving discourse considerations and the like. These are best understood as properties of the resulting configuration."
>
> (Chomsky 2001a:27).

In line with the above is the idea that there may be optional EPP features which may be assigned to a category early at lexical insertion only if they result in an outcome which may yield a distinct interpretation at the interface (cf. also Reinhart 2006 on Interface economy discussed earlier).

Chomsky (2001b:11) further points out that IM is 'motivated by non-theta-theoretic C-I conditions: scopal and discourse-related (informational) properties in particular.' Chomsky (2001b:11) also states that a given head is assigned an EPP feature 'only if it yields new scopal or discourse-related properties. Informally, we

can think of [EPP features] as having the function of providing new interpretations; ... such functional accounts are eliminated in terms of mechanisms.'

What is meant by the above claims is not that the focus head has a focus-related EPP feature. Rather, the idea behind it is that the EPP-satisfaction in NS facilitates the interpretive properties of elements which are found dislocated in 'edge' positions as a result of EPP satisfaction ready to receive the relevant interpretation. Hence, the displacement operations do not affect the semantics of the outcome in the sense that they are not themselves driven by focus-EPP or semantic features.

Indeed, to ensure economy of derivation, Chomsky assumes that the semantic and the prosodic properties of expressions such as old/new information receive an interpretation by the SC-PC, due to the position these elements occupy in the clausal architecture as the result of movement for EPP-driven reasons.

Hence, as I understand it, discourse-related notions such as focus and topic, cannot be accommodated by movement operations in the syntactic component. Pragmatic considerations do not implement movement in the computational system. The semantic and phonological properties of these phenomena are assigned by 'language-external' systems (C-I and A-P systems).

This assumption has a further consequence: if these properties were assigned by the computational system in terms of syntactic derivations, then syntax would lose its autonomous character. This theoretical formulation gives syntax a greater degree of autonomy and immediately excludes further motivation for movements especially those occurring for the satisfaction of discourse implementations. In my interpretation, this further implies that the autonomy is also ensured by disallowing prosodically driven operations to take place within NS (Zubizarreta 1998) and simultaneously, does not extend the 'skeleton' of the clausal structure through the generation of extra functional projections for the satisfaction or the accommodation of discourse related element (e.g. focus or topic/periphery features). I believe it would be an exceptionally uneconomical process if the relevant interfaces re-arranged the already submitted syntactic constituents in a different way (from the way NS has already arranged them), so that LF and PF can apply their semantic and phonological operations respectively. The arrangement of these edge-related constituents in NS in cases of displacement is triggered for EPP-satisfaction reasons.

Actually, previous work on Greek, Sifaki (2003), following Chomsky (2002), also assumes EPP to be the only formal trigger for movement in NS for Greek, and as

such, in principle, EPP is available in every functional projection. Sifaki (2003) entertaining ideas in Holmberg (2000), tests the hypothesis that EPP comprises a D and a P(honological) feature. For EPP to be deleted, a phonologically overt syntactic category (i.e., subject, object, VP, etc) needs to bear an interpretable D-feature, in order to raise it to SpecXP to satisfy both features in one go. Her empirical evidence comes from Greek which displays subject-inverted orders (i.e. VOS, VSO), in which all constituents are candidates for focus/stress assignment. As a result, focus may mark either the verb, or the object, or the subject. She accounts for VOS (and VSO), by assuming that the whole VP raises to SpecIP for EPP satisfaction considerations. The D-feature is generally satisfied by the verbal morphology, whereas the P-feature by the overtness of the whole VP. Focus and topic interpretations are assigned to the relevant constituents in these orders by SC simply by the position these elements occupy in the clausal architecture. No discourse-related features are present in the derivation, so the Inclusiveness Principle is not violated[115].

What is crucially important in view of the Strong Modularity hypothesis (Horvath 2009) and current Minimalist advancements is that focus is a pragmatic not a syntactic property. It does not drive movement but is rather an interface-induced property; an information structure notion along with other notions, such as contrast, topic, comment, presupposition, etc.

Consequently, there could be several options to account for the optionality of focus structures in Greek. These options could be motivated either by (a) independent quantificational operators of the computational systems having truth conditions (cf. Horvath's 2009 analysis of Hungarian focus movement motivated by a maximality operator of EI), (b) an interface effect, such as facilitation of the mapping of syntactic structure to representations of information structure (as suggested by van de Koot & Neeleman 2008 in terms of discourse templates), (c) an uninterpretable EPP feature

[115] The notion of the focus feature in the grammar has become conceptually problematic, simply because, while, on the one hand, the system needs it, on the other hand, it has to dispense with it all together. First of all, the Focus feature is not a lexical feature but rather a relational property (cf. Zubizarreta 1998) and as such it violates Chomsky's (1995:220) *Inclusiveness Condition* which states that 'there are no PF-LF interactions relevant to convergence'. Convergence is determined only by independent inspection of the interface levels. Several scholars Zubizarreta 1998, Szendröi 2001, Brunetti 2003, Reinhart 2006, Kidwai 2000, among other have pointed the problematic status of a focus feature as a violation of the Inclusiveness Condition, agreeing that it is neither obvious how focus can be a property of a lexical item, nor clear how it could drive the syntactic computation within Chomsky's feature-checking mechanism.

which derives word order variation that feeds into the interpretive components (Chomsky 2001, 2002, Sifaki 2003).

Here, in accordance with the discussion in section 3.7, I would like to assume that outputs of the computational system are not directly discourse motivated, in the sense that the displacement operations do not affect the semantics of the outcome (do not license a focus interpretation). These outputs are mapped into the interpretive components so that syntactic objects can receive their discourse related interpretations (compatible with the architecture of grammar propose in Chapter 1). As argued in section 3.7, the optionality in Greek - the difference between let's say SV**O$_F$** and **O$_F$**VS - can be explained assuming that focus movement is an 'altrouistic' movement; it does not serve focus itself (it does not license focus interpretation) but it rather results in a syntactic configuration matching the required input form of a mapping rule of information structure (as in 102), a discourse template (a focus-background template) or interface condition, that otherwise would not be able to be fulfilled (Neeleman & van de Koot 2008). Alternatively, one can allow for the NS to freely generate a range of word orders provided that there is some impact at the interface (the impact being again that the relevant C-I interface rule is fulfilled and not Chomsky's 'right position' idea, cf. the discussion in Chapter 1: 1.3).

3.9 Conclusions

In this Chapter, I challenged the syntactic approach to focus, with respect to the syntactic encoding of semantic interpretation. I showed that Greek has two strategies, *ex-situ* and *in-situ*, and that both syntactic options are permitted for encoding different semantic types of focus. I argued that semantic types of focus are not syntactically encoded in Greek; rather interpretive choices among positions are pragmatic/discourse effects which can be attributed to speaker's strategies to encapsulate or package information based on their contextual considerations.The fact that the semantic manifestations of focus are not syntactically encoded leads us to a uniform treatment of focus at the semantic component; a unification of focus (à la Rooth (1992)). I also argued that focus does not affect the propositional content of the sentence and that the interpretational readings of contrast or exhaustivity are determined by the discourse context.

In the second part of the chapter, I discussed issues of optionality and economy. In section 5, I presented a cross-linguistic survey of the strategies of focus encoding, and provided a discussion on optional and economic operations. In section 6, I provided a tentative proposal on the issue of optionality based on notions of costly operations and complexity, showing that languages always ensure economy by *not* permitting two (or more) focus-equivalent constructions, since one will always be less economical than the other. However, in section 7, I re-examined issues on optionality and economy in the light of Horvath's (2009) Strong Modulariy Hypothesis of Discourse Features and the interface-based account of discourse templates by Neeleman & van de Koot (2008) and I agreed with the view that optionality is permitted if movement does not serve focus per se but it rather facilitates a transparent mapping of syntactic constituents to constituents of information structure, which is part of the C-I. In section 8, I attempted to assess the implications of interface-based accounts in light of current Minimalist assumptions.

CHAPTER 4: THE SYNTAX-PROSODY INTERFACE

4.1 Introductory Remarks

In Chapters 2 and 3, I provided evidence that the encoding of focus interpretation in Greek does not involve a cartographic treatment of discourse functions. In Chapter 3, I concluded that the computational system is not sensitive to semantic focus types in Greek, reasoning that semantic types are not directly encoded in syntax in a clear-cut fashion. Focus in Greek is realized through optional strategies; however, the displacement effects do not have input in the semantic representation of the outcome but rather interpretations are assigned by the Interfaces through mapping rules. Hence, focus interpretation must be pragmatically or discourse determined.

The question is though how is it encoded? If focus is not encoded syntactically, via a cartographically encoded focus position in the left periphery, then how is focus interpretation obtained in the language?

In this Chapter, I offer a stress-based analysis of encoding focus in Greek. I argue that focus in Greek is associated at the level of prosodic structure, assuming a direct mapping between the phonological representation (stress) and the pragmatic representation (focus) which is formalized in Reinhart's (1995, 2006) Focus interpretation principle in (1), and interpreted off output representations of the mapping from prosody to discourse. In this respect, the interpretation of focus in Greek takes as input representations of prosody into discourse.

(1) *Focus Interpretation Principle* (Reinhart 1995:62)

The focus of the clause is any syntactic constituent that contains the main stress of the intonational phrase corresponding to that clause.[116]

To account for the above claim, I propose here a model of componential mapping between syntax, prosody and discourse which accounts for the licensing of focus interpretation in Greek. This model has two mechanisms: (a) the prosody-discourse mapping which constitutes the level at which focus interpretation is encoded, and (b) the S-P mapping, the level where focus is signalled via stress, which consists of two processes: the processes of alignment (S-PA) and misalignment (S-PM).

The first mechanism, the prosody-discourse interface mapping mediates the direct relation between stress and focus. Discourse decides that a certain interpretation needs to be licenced, say subject focus, and prosody ensures to signal the hearer that the specific interpretation is met through its prosodic realization. That is, discourse determines and requires and prosody justifies discourse/contextual requirements. I reason for this mapping arguing that prosody encodes information about the information structure of the sentence; it directly aims to anchor the sentence into its context, providing the link between the meaning of the utterance and its appropriateness in discourse (see section 4.2).

The second mechanism, the S-P mapping, calculates the position of focus in the prosodic structure by means of the S-PA and the S-PM processes, which are triggered by the prosody-discourse mapping, which imposes the requirement that the focus position matches the position of stress.[117] I propose that focus - by means of main stress - always occurs rightmost in prosodic structure, even in cases that it is not rightmost within the clause, e.g. the most embedded constituent. Stress assigned to the focused element does not always have to be rightward or the most embedded in a clause. Anticipating the analysis in Section 4.5.3, I argue that stress assignment to the

[116] Principle (1) establishes that focus and stress are intimately related. However, the place in the grammar where such a relation takes place is still controversial. One standard assumption (Selkirk, 1984, 1995; Rochemont 1998, Cinque 1993 many others) is that this relationship is syntactically constrained. However, this assumption has not gone unchallenged (cf. Schwarzschild 1999; Chapman 1998; Kadmon 2001, a.o arguing for a pragmatic account). It has been basically argued that phrasal prominence plays a crucial role in determining the relation between focus and prosody, where focus is identified by clause structure rearrangements, i.e. determining the word order. In Chapter 1, I stated that this principle feeds into the CI-S Interface.

[117] Largely triggered by the interpretive requirement that focus is signalled via stress (in line with Reinhart's Focus Interpretation principle).

focused constituent must be as far right as possible within the (phonological) phrase that contains it. In this respect, it can freely occupy any position in the clause, as long as it falls on the rightmost element in the phrase carrying the focus. This is enabled via the S-PM, which facilitates the assignment of main stress in non-final focus instantces by aligning the non-final focus element in the syntax with the right-edge (rightmost most prominent element) of a phonological phrase in prosodic structure, other than the one that is final.[118] The rightmost position of main stress in prosodic structure finds support in the prosodic status of post-focal material: post-focal material is de-accented and subsequently dephrased.

As a result, this proposal accounts uniformly for all instances of focus across the sentence (clause-initial, internal and right-peripheral) at the PF interface. Furthermore, it crucially predicts that the output representations of the S-P mapping that feed directly into the information component (part of C-I interface) underdetermine the position of focus syntactically and interpretationally. Hence, the underdeterminacy with respect to focus interpretation discussed in Chapter 1 (section 1.2.1) and Chapter 2 (section 2.4.1) is a consequence of the fact that focus interpretation runs off prosodic structure (see section 4.5.3).

The optional variants or underdetermined structures are regulated by interface-driven strategies that allow a transparent mapping on syntactic and information structural blocks (Chapter 3:3.7). In other words, as argued in Chapter 3:3.7, the choice between focus movement as opposed to the *in-situ* option is explained, if we assume that movement does not serve the focus per se but it facilitates a transparent mapping between syntactic constituents and constituents of the information structure.

The remaining Chapter is structured as follows: In Section 2, I discuss the role of prosody in the grammar and I argue that prosodic prominence is relevant in disambiguating meaning in context. In Section 3, I discuss issues of optional and costly operations based on the ranking of costly operations proposed in Chapter 3:3.6,

[118] The S-P mapping proposed in this Chapter further supports the view of grammar discussed in Chapters 1 and 3, in which the different components are autonomous, self-contained and only related by mapping rules (in the spirit of Jackendoff 1997, 2002). In this type of architecture, the idea that focus is universally marked by pitch accent in stress languages is reflected in the discourse-phonological constraints proposed in theories of focus (Chen 1987; Nespor & Vogel 1986; Zec & Inkelas 1990; and Jackendoff 1972; 1997; Selkirk 1995; Büring 2003; Truckenbrodt 1995, 1999; Samek- Lodovici 2005, 2006; Fery & Samek-Lodovici 2006).

and provide evidence that Greek opts for the free option of NSR assignment avoiding stress-driven operations, ensuring the autonomy of the different components of the grammar. In Section 4, I show that focus is also uniform at the PF Interface. There are no different types of stress encoded directly in the grammar through different positions. I offer a unified approach of prosodic types of focus, arguing against Zubizarreta's (1998) Contrastive/Emphatic stress rule as conceptually redundant. In return, I show that all that is sufficient and necessary is rightward prominence on the right edges for a uniform treatment of focus marking (in the lines of Samek-Lodovici 2005). In Section 5, I present the S-P mapping in Greek that accounts for the right, middle, and left peripheral focus positions. I examine the process of aligning syntactic structures with prosodic structures across the clause structure in Greek and I show how focus is encoded prosodically taking on previous assumptions argued for Greek intonation and prosodic phrasing (Revithiadou 2004; Revithiadou & Spyropoulos 2009; Baltazani 2002, Arvaniti & Baltazani 2005). Section 6 concludes the Chapter and presents further predictions.

4.2 The Prosody-Discourse Mapping

Recall from Chapter 1:1.1 that the meaning of a sentence is compositional, i.e., it is the combination of the meaning of its parts, and semantics is the area that deals with meanings of sentences. On the other hand, the meaning of an utterance is considered to be pragmatic. Every utterance must relate to a context, otherwise it cannot obtain a status in the discourse. By context we mean the immediate discourse environment that the utterance fits into, e.g. a wh-question and answer pair. Focus highlights the information that is not part of the known discourse, and directs the interpretation of the utterance to a relevant set of alternatives by leading the attention to the part of the utterance that is informative (Cf. also Chapter 3: 3.2-3.3)

Although focus is the new informative part of the sentence in a context, its presence cannot be identified without the existence of prosodic or intonational cues. A given utterance, without the presence of prosodic cues cannot say much about its Information structure; it is informationally ambiguous. The fact that focus and prosodic prominence have a strong relation is well-known in the linguistic theories, since Bolinger (1962), Chomsky (1971) and later. Recall that in Chapter 3, I argued

that semantic focus does not make its own truth-conditional interpretation contribution in the sentence. I argued that notions of contrast or exhaustivity are not encoded as a part of the meaning of focus but are rather determined pragmatically by discourse context.

Here I extend further this view and take the position that focus acquires 'meaning' through intonation. Prosody plays a role in disambiguating meaning in context. I argue that the role of prosodic prominence is to direct and interpret utterances within their context, assigning different intonational structures melodic realizations to the part of the utterance that carries the new information and different to the ones that are given information.[119]

Let me illustrate by considering the following examples from Ladd (1996). In (2) and (3) we have examples of two different intonational structures of the same sentence. Example (2a) can be related to a context where one could be asking *where did you go just now?* whereas (2b) cannot be the answer to the same question. (2b) is appropriate to a context-question such as, for instance, *what happened to all the garbage?* Similarly (3a), given the intonational structure where stress falls on 'parents' can be an answer to a context *anything happened while I was out?*, while (3b) with stress on *called* is suitable in a context such as *maybe you should call your parents and tell them.*

(2) a. I took the [$_{F}$ **GÁRBAGE**] out
b. I took the garbage [$_{F}$ **OUT**].

(3) a. My [$_{F}$ **PÁRENTS**] called
b. My parents [$_{F}$ **CÁLLED**] –they already know.

(examples from Ladd 1996:229)

Both utterances of (2) and (3) have the same propositional content; however, it was shown that they are not interchangeable in context. What decides on their context is their intonational structure, the position of the main prominence. That is what makes them acceptable or unacceptable in a context. For (2) and (3), in the absence of a context, our awareness of the intonational structure of each utterance can guide us to work out the different prosodic realizations of the utterances and recover their

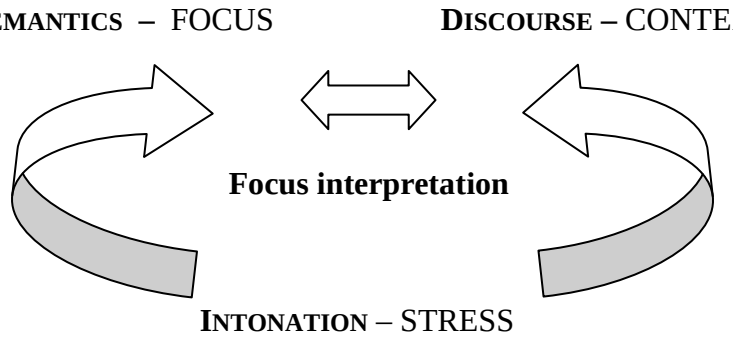
[119] I will look at these distinctions further when I discuss about the S-P mapping in section 5.3.

context. The two groups of utterances are perceived by listeners as having different denotations or senses. However, this difference is not one of propositional content; it does not affect the truth conditions of the sentences. There are no situations under which the propositional content of one or the other can turn into true or false. Their difference is attributed to the choice of context under which each one can fit into. In this respect, the intonation of an utterance acts as the link between the meaning of the utterance and its context. The different meanings available in (2a-b) and (3a-b) are the the outcome of the function of intonation (assignment of melodic contours) which result to the linking of the utterance to the appropriate context.[120]

Hence, I adopt the view that the role of intonation in grammar is: to associate or anchor an utterance to an appropriate context and this role is uniform. In essence, focus has to be a pragmatic outcome; the outcome of this interaction between intonation and context.[121] The disambiguating effect of intonation is not due to the semantic contribution of focus but to pragmatic principles.

I represent the prosody-discourse mapping in the following schema in (4):

(4)



In more formal terms, based on Figure (4), I argue that languages may use different levels of representation to convey different aspects of meaning and interpretation. I assume that Greek uses the following levels to convey aspects of meaning and

[120] Baltazani (2002) also offers a similar view of the role of the intonation in the grammar.

[121] The claim that different intonations or melodies impress on different contexts is, of course, a very old tradition in linguistic theory (Bolinger (1965), Halliday (1967), Jackendoff (1972), Ladd (1980, 1996), Gussenhoven (1984), Selkirk (1984, 1995), Erteschik-Shir (1986), Pierrehumbert and Hirschberg (1990), Steedman (1991), Vallduví (1990), Roberts (1996), Büring (1999, 1997b), Schwarzschild (1999) among many others). Nevertheless, contrary to what I have claimed for (2) and (3), in Chapter 2, I showed that there are views which defend that focus has a truth-conditional import in the meaning of the sentence, when in interaction with focus-sensitive adverbs (Rooth 1992, Krifka 1991, Jacobs 1993). However, issues related to the *association of focus* phenomena are beyond the scope of this chapter.

interpretation: a narrow semantic level (NSem)[122] and a level of interpretation of utterances in discourse, which is identified with prosody. The NSem level is the level of the propositional content of the utterance; the level of narrow truth conditional meaning which is associated with NS. So, the sentence on its own without the focus associated mechanisms has its own truth conditions. The NSem level provides the basis for the possible focus associated readings, (similar to Alternative Semantics by giving the reading of the presupposition associated with that focus (cf. Chapter 3:3.4)). I argue that semantic focus in Greek cannot affect the truth conditions of the sentence in NS (cf. Chapter 3)[123], but it is rather the prosodically determined focus which can affect the truth conditions associated with the utterance in discourse; it involves the interpretation of the utterance in discourse with its associated prosodic accent contour. Hence, prosody in this work is the level of interpretation of the utterance in discourse and more importantly, the proposed prosody-discourse mapping is the level of representation where focus interpretation is encoded.

The above discussion has an important consequence for the architecture of grammar: If we assume Reinhart's interpretive principle in (1) maintaining the idea that prosodic/information defines meaning, we immediately violate Chomsky's *Uniformity of Interface Condition*s which states that there are no rules, principles, etc. which access or refer to the two interfaces directly.[124] This is why syntactocentric accounts assume the [+F] feature, because it is the only link between the interfaces, PF and LF, which otherwise cannot 'see' each other. However, in languages which mark information structure via stress, it is essential that prosodic information can access the semantic-pragmatic information (cf. Chapter 1, section 1.3).

Thus, following Szendröi (2001, 2003), Reinhart (1995, 2006) and Jackendoff (1997)[125], I argue that prosodic information in Greek supports direct interaction

[122]I assume that this level is universal across languages.
[123] Here, *association with focus* phenomena are excluded.
[124] According to Chomsky (1995: 220) 'there are no PF-LF interactions relevant to convergence'. Convergence is determined only by independent inspection of the interface levels; whatever communication exists between them, it is mediated by NS. Basically, this violation is evident in any proposal which assumes that discourse constraints license relations between the semantic and the phonological component (Cf. Szendroi 2001, 2003; Reinhart 1995, 2006).
[125] Evidence for the existence of a direct PF-LF mapping comes also from Jackendoff (1997). More specifically, Jackendoff assumes a model of lexical insertion where phonology and semantics communicate directly with each other without the mediation of syntax. This is because lexical items are finely "individuated" in semantics and phonology but not syntax. In the Minimalist model of grammar lexical items are inserted in the syntactic derivation carrying along phonological and semantic information which is not referred to in syntax. Then, what is the purpose of that? Therefore, he assumes

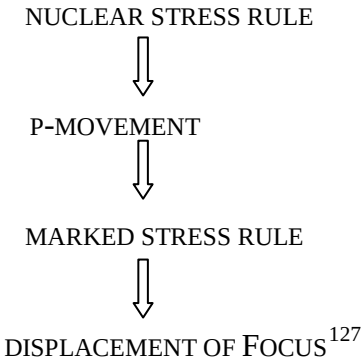
between LF and PF, as well as access of the phonological component to the interface with the information component (or the C-I in Chomskian terms).[126]

Having established the prosody-discourse mapping, I will look in what different means languages incorporate the Focus Interpretation principle in (1) and present arguments that Greek opts for the less costly option, the S-P mapping (in accordance with economy consideration discussed in Chapter 3: 3.6).

4.3 Justifying Stressing mechanisms Cross-Linguistically

In Chapter 3: 3.6, I raised issues of optionality and economy in focus marking and offered a tentative ranking of operations identifying focus starting from the least costly operations and advancing to the most costly ones. The schema is repeated here in (5):

(5)



In Chapter 3:3.6, I showed that in the first three operations in (5), focus is always related to main stress, either as the result of the NSR (least-costly), of scrambling to strand a constituent in NSR position (P-movement), or of the relocation of main stress to a non-NSR position (marked stress rule). The last operation involves syntactic displacement of the focused constituent which can be either related to main stress as in the case of Hungarian left-ward stress driven movement (Szendröi 2001) or the case of feature driven syntactic movement (Rizzi 1997) which is further related to a

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that lexical insertion happens at a late S-Structure, in the same lines of thought with Di Sciullo & Williams (1987), Halle & Marantz (1993).

[126] This view is actually also against Miller's et al (1997) Principle of Phonology-Free Syntax which advocates that phonological information has no effect on syntactic computation.

[127] Chomsky (2000:101): 'Move is more complex than its subcomponents Merge and Agree, since it involves the extra step of determining P(F) (generalized 'pied-piping').'

certain interpretation. I offered a tentative prediction, that languages ensure economy by *not* permitting two (or more) focus-equivalent constructions, since one will always be less economical than the other; optional variants should then be attributed to distinct interface goals (cf. Chomsky 1995; Brody 1995; Reinhart 1995, 2006). However, the problem with Greek remained: how do we account for the optional focus variants (moved option) in Greek, in terms of economy, provided that a language does not permit more than one focus-equivalent structures?

Taking on the above, I argued that optionality in Greek is motivated by the fact that there is no formal feature-checking mechanism involved but is rather facilitated by an interface-based conceptualization of the grammar, under which the optional variants are licensed merely as a way of facilitating a transparent mapping to information structure (Neeleman & van de Koot 2008).

Here, I provide evidence that the main option for encoding focus in Greek is the first one: the application of the NSR. In what follows, I will demonstrate how this option is justified, as opposed to the other two: p-movement and the marked stress rule. Recall that all these options except the NSR assignment are there to resolve contradictory outputs between the location of main stress assignment and the actual focus assignment required in a given context across languages.

In Chapter 3:3.6, I discussed some approaches which accommodate the relation between focus and stress (Cinque 1993, Reinhart 1995, 2006, Zubizarreta 1998, Szendroi 2001, Samek-Lodovici 2005, 2006). What is common between these accounts and especially Reinhart (1995, 2006) and Neeleman & Reinhart (1998) is that information structure is determined by PF.[128] Neeleman & Reinhart (1998) argued that in English marked focal utterances, the NSR is overridden by a special prosodic operation, stress strengthening (when the stress constituent is not in the focus set). Szendröi (1999, 2001) argues that a syntactic operation, movement, applies and 'repairs' focus interpretation in marked focal utterances in Hungarian. The trigger for this movement is main stress. Moreover, Samek-Lodovici's (2005, 2006) analysis of Italian focus shows that focus always occurs rightmost in order to match the position of main stress, modulo right dislocation.

[128] Their difference lies in the fact that the operations proposed by Neeleman & Reinhart (1998) are optional as opposed to Zubizarreta's (1998) p-movement which is obligatory, although it does not have to be because it is not syntactic.

None of these operations, however, are evident in Greek or better Greek does not provide evidence for supporting these operations. First of all, stress-shifting operations are not operative in Greek. As Reinhart (1995) and Neeleman & Reinhart (1998) argue discourse-linked elements in English are subject to the operation of destressing.

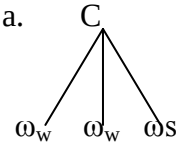
(6) John [$_{\mathbf{F}}$ **CALLED**] *her*

In contrast, in Greek the pronoun is weak, unstressed and cliticizes immediately onto the verb. In this case, it cannot occupy the right-peripheral position and it does not have to be destressed as a result or a special marked operation.

(7) a.* o Giannis kalese *tin*
the John-nom call-3sg-PS cl-her
b. o Giannis *tin* kalese
the John-nom cl-her call-3sg-PS
'John called her'

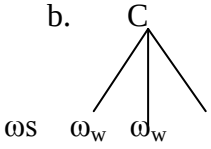
The construction in (7b) is what is called the Clitic Group (*C*) in the prosodic hierarchy (Condoravdi 1990; Nespor & Vogel 1986, 16; also Selkirk 1984, 26ff; Selkirk 1986: 384). As far as the relative prominence of C is concerned, the option that is chosen by most languages is that the strong node is the phonological word that contains the non-clitic element. Whether a daughter of C is strong or weak thus depends on its intrinsic nature rather than on its position within C. This type of relative prominence within C is exemplified on the basis of Greek and Italian respectively in (8) and (9) below.

(8) a.



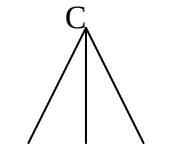
[mu to édose]
'(he) gave it to me'

b.



[dóse mù to]
'give it to me'

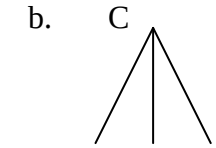
(9) a.



[me lo da]

'(he) gave it to me'

b.



[da me lo]

'give it to me'

It should be noted in the example in (8b) that the Stress Readjustment rule of Greek applying in the domain of the Clitic Group does not alter the location of primary stress, which remains on the non-clitic element of C. Thus, the strong member of the C is the non-clitic element. Note, that the clitic construction that involves the C in Greek is less marked than the construction that involves destressing in English.

Let us now return to the option of stress-driven movement. Again, Greek does not provide any evidence for the existence of such movement. First of all, there is no language internal evidence that stress is leftmost in Greek similarly to, for instance, Hungarian, so that we could argue for a stress-driven movement approach, as in Szendröi (2001, 2003). Apart from anything else, nuclear stress in Greek is assigned by default on the rightmost constituent (see section 4.5.2), unless intonational phonology facts state otherwise, e.g. the accent in negative declaratives and wh-interrogatives is on negation and the wh-element respectively (Arvaniti et al.1998, 2000, 2006b; Arvaniti & Baltazani 2005, Baltazani 2000a, b, 2006). Therefore, the PF driven syntactic movement is unmotivated. For instance, in Italian the requirement that focus meets stress is amended in syntax (cf. Samek-Lodovici 1996, 2005). When the subject is focused, it can always occur clause finally as in (10). Furthermore, if main stress remains rightmost the subject cannot occur preverbally:

(10) Q: Who won the race?

A1: L'ha vinta [$_{F}$ **GIANNI**]

it-has won John

'**John** won the race'

A2: *Gianni l'ha **VINTA**]

John it-has won

'John won it'

A similar distribution applies to any other focused constituent. If the direct object, for instance, is to be focused in a dative construction, the direct object moves to the right peripheral position to pick the nuclear stress.

(11) Context: Where did you go with Mario?
Sono andato con Mario [$_{F}$ a **ROMA**]
am.1sg gone with Mario to Rome
'I went to ROME with Mario'
(examples from Samek-Lodovici 2005: 12)

In Greek, stress indicative of focus can be assigned to a right dislocated constituent (e.g. an adjunct) or to the constituent right before it, but this is not the result of some language specific PF property or a discourse requirement satisfied in syntax, as shown in (12) and (13).

(12) a. I mitera gializi sto saloni [$_{F}$ ta **ASIMIKA**]
the mother-nom polishes-3sg in the lounge the silverings-acc
'The mother polishes the **silverware** in the lounge'
b. I mitera gializi [$_{F}$ sto **SALONI**] ta asimika
the mother-nom polishes-3sg in the lounge the silverings-acc
'The mother polishes the silverware in the **lounge**'

(13) a. akubise sto trapezi [$_{F}$ ta **KLEIDIA**] (ke etrekse na sikosi to tilefono)
left-3sg on the table the keys-acc (and run to pick up the phone)
'He left the **keys** on the table (and he run to pick up the phone)'
b. akubise [$_{F}$ sto **TRAPEZI**] ta kleidia
left-3sg on the table the keys-acc
'He left the keys on the **table**'

Despite the above observations, there have been previous proposals which have assumed that subjects and objects that scramble to the right edge of the clause and crucially occur after nuclear stress, undergo Right-Dislocation. (Agouraki 1993; Anagnostopoulou 1994; Schneider-Zioga 1994; Tsimpli 1995; Valiouli 1994). In the literature, right-dislocated constituents have been treated as distinct constituents. For example, Tsimpli (1995) proposes that right-dislocated subjects (in VOS) and doubled

objects are adjoined to TNSP (cf. Chapter 2: 2.2.1). However, the general freedom in the order of post-verbal complements (arguments and adjuncts) in Greek makes it harder to support the existence of a distinct right-dislocated constituent on purely structural evidence. Consider again the examples in (12) and (13): In both examples the argument occurs after the adjunct. In the (12a) and (13a) examples the accent falls on the argument, which is the rightmost constituent in the sentence. In the (12b) and (13b) examples the accent falls on the adjunct. It is hard to distinguish the two cases structurally and argue that, in the (12b) and (13b) examples, the argument is dislocated to the right whereas in the (12a) and (13a) examples it is not. The fact that stress has a free distribution, it can fall either on the adjunct or on the argument without any re-arrangements in the word order cannot support a right-dislocation analysis. The direct object in the (a) examples has not moved to right to receive stress (due to the fact that stress remains rightmost), nor has the adjunct been p-moved so that the direct object receives the stress, as in the Italian example in (11), since the other order where the direct object precedes the adjunct is also possible under the same focus pattern.

The notion of right-dislocation becomes useful once the information structure of these sentences is considered. The (a) examples may receive a wide focus reading, whereas in the (b) examples the argument is interpreted usually as given or ground information (tails in Vallduví's terms, cf. Chapter 5). Consider (14) below:

(14) a. [$_{\mathbf{F}}$ i mitera gializi **STO SALONI**] [$_{\mathbf{TAIL}}$ ta asimika]
the mother-nom polishes-3sg in the lounge the silverings-acc
'The mother polishes the silverware in the **lounge**'

b. [$_{\mathbf{F}}$ akubise sto **TRAPEZI**] [$_{\mathbf{TAIL}}$ ta kleidia]
left-3sg on the table the keys-acc
'He left the **keys** on the table'

However, as I will show in section 4.5.2, the cases in (12b) and (13b) due to prosodic considerations are best considered as cases of de-accenting of post-focal material, rather than receiving a right-dislocation analysis of post-focal material. By virtue of their syntactic position the above tails could be in fact considered as right-dislocated; however, prosodic evidence shows that once the stress has been assigned to the focused constituent the material that follows becomes immediately de-accented and

possibly dephrased. This de-accenting is the immediate result of nuclear stress being assigned on the focused constituent. Hence, the assignment of nuclear stress affects the prosodic and discourse status of post-focal material, due to prosodic conditions that will be discussed in section 4.5.2-4.5.3. It is not a marked operation such as strength strengthening or de-stressing that happens to achieve an interface need that cannot be achieved otherwise (Neeleman & Reinhart 1998) because it does not involve a relocation of stress but it is the effect of the operation of NSR in non-final focus structures by means of a misaligne S-P mapping (section 4.5.3).

Let us now consider the other option offered by Zubizarreta (1998), namely prosodic movement (p-movement), or the scrambling operation proposed in Neeleman & Reinhart (1998). Although, this type of movement is more economical than relocation of stress operations, - stress-strengthening or de-stressing of focalized material-, it is nevertheless an optional operation, and its existence is again unmotivated for Greek (contra Haidou 2000, 2003; Georgiafentis 2001; Georgiafentis & Sfakianaki 2004). Let us assume for the time being that this movement takes place so that defocalized material scrambles out of the way of focus resolving the conflict between the focus prominence and the NSR application (Zubizarreta 1998, also cf. Haidou 2003).[129]

Let us consider the scrambling option for the subject and the object in Greek. In Greek, in a neutral context or in those cases where the entire sentence is the focus of the utterance, the main or the nuclear stress of the sentence aligns with the phrase or word that occupies the final position of the sentence, that is the most embedded constituent of the sentence (in line with Chomsky & Halle 1968, Halle & Vergnaud 1987, Cinque 1993, Selkirk 1995). [130]

(14) a. agorase i Maria [$_{\mathbf{F}}$ ena **FOREMA**] VS**O**
bought-3sg the Maria-nom a dress-acc

[129] It has been previously argued (Haidou 2000, 2003) that this movement is operative in Greek deriving the various word orders in a Kaynian (1994) style of remnant movement motivated by PF considerations. However, as it becomes obvious from evidence presented in this section, I do not believe any longer that this is the right option for Greek.

[130] The phrase that receives the stress exhibits a slightly higher prosodic (F_0) peak than its predicted level. Due to the declination effect, i.e., a downward trend of the F_0 contour throughout the utterance, the peak of the stressed element is not necessarily higher than those of preceding phrases. Nevertheless, the stressed element exhibits a higher peak level than the one predicted from declination.

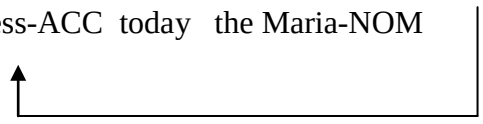
b. agorase simera i Maria [$_F$ ena **FOREMA**]
bought today the Mary-NOM a dress-ACC
'Maria bought a dress (today).'

(15) i Maria agorase simera [$_F$ ena **FOREMA**] SV**O**
the Mary-NOM bought today a dress-ACC
'Maria bought a dress (today).'

In both the above examples (14) and (15) the application of the NSR on the last constituent is not the result of scrambling the defocalized material before it. This is a case of alignment between syntax and prosody (argued in Section 4.5). VSO is considered the default order and in SVO the subject is in topic position according to syntactic assumptions (Chapter 2, section 2.2.1). It would be very unorthodox to argue that either of the above structures is derived via p-movement.

Let us now look at the subject focus context, where the subject occupies the final position shown in (16). Can we argue that this structure is derived from VSO in (14) above where the object has been scrambled out of the way, so that the subject receives the stress?[131] After all, the scrambling of the object in front of the subject so that the subject receives the main stress violates economy, according to the ranking in (5).

(16) agorase *ena forema* simera [$_F$ i **MARIA**] $t_{\text{ena forema}}$
bought a dress-ACC today the Maria-NOM



Although this explanation seems elegant and possible (it has been proposed by Alexiadou 1999; Georgiafentis 2001; Haidou 2000, 2003) it is not the appropriate one for a number of reasons. First, Greek does not exhibit properties of scrambling/object shift of the Scandinavian/ Dutch type. The counterpart of these operations in Greek is clitic doubling as argued by Alexiadou & Anagnostopoulou (1997c, 1999) shown in Chapter 2 (Section 2.4.4.1). If clitic doubling carries the interpretation of the object

[131] This option has been argued by Alexiadou (1997, 1999), Haidou (2001, 2002, 2003), Georgiafentis (2001), Georgiafentis & Sfakianaki (2004) building on Zubizarreta (1994, 1998).

NP as given, coupled by with the fact that clitics are inflectional affixes and are obligatorily present in the structure (Alexopoulou 1999, Alexopoulou & Kolliakou 2002, Roussou & Tsimpli 2006), then there is no need for redundant movement operations motivated by interface needs (as we will see in Chapter 5) . Clitic doubling serves this interpretational purpose without violating 'economy'.

Second, there are recent syntactic accounts Sifaki (2003), Roussou & Tsimpli (2006), Kechagias (2009, 2011) which assume that not just the verb but a larger constituent, namely, the verb and the object (VO) can move to T, a case of 'pied-piping' of the verbal phase than just a movement of the bare object. These analyses are not prosodically motivated, but rather purely syntactic. Sifaki assumes that the reason for movement is EPP-satisfaction. Roussou & Tsimpli (2006) offer different syntactic derivations of VOS depending on different mapping from syntax to discourse. Kechagias (2011) shows that what differentiates the two constructions in (14) and (16) is that the latter order is due to a flexible strategy in the narrow syntax that allows the object to pied-pipe alongside the verb to the TP domain, while the subject remains in Spec,vP. I agree with a syntactic scrambling analysis of VOS in this respect but not one motivated by prosodic reasons. More specifically, one could convincingly argue that VOS can be derived directly from the pro-drop parameter (Rizzi 1982) as discussed in Chapter 1:1.5).[132]

Third, even if we were to take scrambling as a focalization process instead of being a defocalizing process, we would still encounter problems: The position of nuclear stress does not shift even if scrambling takes place: the stress always falls on the most embedded constituent. If the scrambled constituent needs to be focused for independent focusing reasons and not for syntactic reasons, then a special mapping will need to be postulated.

Finally, I would like to point out an additional problem with the VOS order which could actually disregard all the above discussion. From an interpretive point of view, although in VOS the subject receives stress by default application of NSR, there are no neat statements as to the grammaticality of this structure. Although previous

[132] VOS can be derived in one of the following ways: either by right adjunction of the Subject in VP (or a higher functional head, cf. Philippaki-Warburton 1985), or by raising both V and O to relevant positions in the functional domain above VP (separately, or as the result of remnant movement in a Kaynian style), thus stranding only S (see Ordonez 1998 for Spanish; Belletti 2001, 2004, Cardinaletti 2001 for Italian ; Alexiadou & Anagnostopoulou 1998, Spyropoulos & Philippaki-Warburton 2001, Georgiafentis 2003, Sifaki 2003 for Greek, a.o).

literature has argued that the subject in VOS can be focused carrying either information or contrastive interpretation (Philippaki-Warburton 2001, Haidou 2004, Alexiadou 1997, Georgiafentis 2005 among others), it is not really a natural answer ti the question '*Who bought a dress today*?'. Hence, although the subject receives the stress in the rightmost position this order does not comply with the Focus Interpretation Principle in (1), since this stress is not related with the focus of the sentence. The effect is even more obvious if the subject is contrastively focused. Anticipating the discussion to follow, in Chapter 5:5.7, I argue that Verb-initial orders violate the S-PA mapping that will be proposed in Section 4.5.3

To summarize, Greek does not opt for costly operations such as marked stress rules or p-movement evident in Romance, Germanic and Scandinavian languages (Stylistic Inversion, Holmberg 1999). In effect, I argue that Greek satisfies the Focus Interpretation principle in (1) via the least costly application of the NSR.

Now, how does Greek resolve the conflict when nuclear stress assignment is rightmost but focus prominence is not? I propose that this is not done by movement but it is rather the result of a misaligned mapping between syntax and prosody which accounts for the assignment of main stress in non-final focus structures. I argue that focus in Greek always occurs in final position in prosodic structure, due to requirements of prosody, and what probably looks like displacement effects is only that post-focal material becomes de-accented (cf. section 4.5.3).

In what follows, I provide evidence that focus is also uniform at PF not exhibiting distinctions between contrastive and non-contrastive stress, arguing that there are not two different types of prosodic prominence. I mainly present evidence against Zubizarreta's (1998) postulation of an extra emphatic/contrastive rule accounting for contrastive stress in the grammar. I show that this rule is redundant because all that is necessary is rightmost prominence at the right edge not of the syntactic clause but of the phonological phrase containing the focus (cf. also Brunetti's (2003)). Thus, Greek does not need independent justification for different types of prosodic focus. The unified treatment of focus at PF is very important for the following reasons: First, it will provide further evidence that Greek does need costly rules or operations for the application of stress assignment of the focused constituent (also argued in this section). Second, the explanation that stress can be assigned at the right edge of the phonological phrase which is not rightmost in the syntactic clause has further consequences: (i) stress is assigned in the prosodic structure and not

directly in the syntax (contra p-movement accounts) (ii) the syntax and prosody should be kept distinct only related via mapping rules (Selkirk 1996, Truckenbrodt 1999, Samek-Lodovici 2005, Szendröi 2001, Büring 2003, 2007 among others).

4.4 Focus is uniform at PF: Evidence against the E/CSR

In Chapter 3, I presented evidence against the standard assumption that there are two semantically unrelated and divergent types of focus in Greek, showing that É. Kiss's (1998) claim does not hold for the language. I argued that focus is a phenomenon with a uniform interpretation at LF: that is, it always expresses new, non- presupposed information. The exhaustive interpretation of focus is not an inherent focus-internal property, but turns out to be the outcome of the interaction between the semantic component and the discourse component, i.e. context.

In this section, I argue that focus is also one and the same phenomenon with respect to the PF interface. Focus is mainly related to stress in any position it can be spelled out and there are no different stress/accent assignments corresponding to different semantic types of focus.

The fact that the two types of focus are related to two types of prosodic prominence, contrastive and non-contrastive, has been suggested in accounts of the focus-prosody relation in Germanic languages like English, German and Dutch, particularly within the argument structural approach to focus structure (Gussenhoven 1984, 1992; Rochemont 1986; Schmerling 1976; Selkirk 1984, 1995). More importantly, though, it has generally been claimed for Romance languages that stress is determined by some version of the NSR, as in work by Cinque (1993) and Zubizarreta (1998). A number of authors have claimed that there are two types of prominence, emphatic and non-emphatic, with two distinct corresponding interpretations has played a central role for their analyses (Donati & Nespor 2003; Ladd 1996 for Italian; Costa 1998; Frota 1998 for European Portuguese; Zubizarreta 1998 for Spanish). More specifically, Donati & Nespor (2003), along the lines of É. Kiss (1998), claim that docus with an emphatic or contrastive interpretation cannot project in Italian and that neutral prominence associated with focus always has to be larger than a single word. However, neutral prominence does not have to be necessarily associated with wide focus domain; neutral focus can also be narrow. Let us consider the following example in (17):

(17) Maybe we should call your parents and tell them.
My parents [$_{F}$ **CALLED**] – they already know.
(Ladd 1996: 229, 6.25)

In (17) stress falls on *called* which is narrowly focused; it is not related to a wide focus domain, e.g. the whole sentence, since the NP *my parents* is already given in discourse.

In addition, Zubizarreta (1998) proposes an extra phonological rule, the Emphatic/Contrastive Rule (E/CSR), to account for focal stress related with a contrastive/emphatic focus interpretation. In what follows, I will look at Zubizarreta's (1998) account and provide arguments against the E/CSR. Zubizarreta (1998) allows for two types of focus: informational focus and contrastive focus (i-focus and c-focus, respectively).

(18) a. Q. C'est qui qui a écrit un livre sur les rats?
It is who that wrote a book about rats?'
A. C'est [$_{DP}$ le chat] qui écrit un livre sur les rats.
'It is the cat that wrote a book about rats.'
b. Q. C'est quoi que le chat a écrit?
'It is what that the cat wrote?'
A. C'est [$_{DP}$ un livre sur les rats] que le chat a écrit.
'It is a book about rats that the cat wrote.'

Clefted questions in French unambiguously c-focus type

First of all, the property of exhaustivity distinguishes the two types of focus. I-focus is non-exhaustive and c-focus is exhaustive shown in (19a-c)[133].

(19) a. Q. Who wrote a book about rats?
A. [$_{DP}$ The **CAT**] wrote a book about rats, and [$_{DP}$ the **BAT**] did too.
b. Q. C'est qui qui a écrit un livre sur les rats?
'It is who that wrote a book about rats?'

[133] However, more recent work on Hungarian by Horvath (2009) argues that exhaustivity is not necessarily a property of contrastive focus.

c. *C'est [$_{DP}$ le **CHAT**] qui a écrit un livre sure les rats, et aussi [$_{DP}$ la **CHAUVE-SOURIS**]
'It is the cat that wrote a book about rats, and also the bat.'

C-focus involves an independent emphatic/contrastive phrasal stress rule that places main prominence on the c-focus constituent; this rule identifies c-focus as well as allowing metalinguistic/metagrammatical functions such as correction, as in *I said CONfirmation, not affirmation* discussed also in Chapter 2:2.6.7 (Zubizarreta 1998: 45, ex: 22). Contrastive stress can surface on function words, such as the *do*-form , as in *John DID leave*. It is always associated with an audibly higher pitch level and is strictly narrow in scope, as in *The cat in the [$_{ADJ}$ BLUE] hat wrote a book about rats (not the one in the red hat).* Thus, it is contrastive stress rather than focus that is associated with the above described functions.

I-focus is identified as the result of the prominence assigned by the NSR. NSR assigns main prominence within the focus structure of the phrase. Moreover, function words are invisible for the computation of the NSR: nuclear stress never surfaces on a function word. In contrast, c-focus is freely assigned including on function words, but i-focus involves the NSR that applies directly in narrow syntax (to the syntactic tree that is the input to Spell-Out) between sister categories (as exemplified in (20) and (21)) under asymmetric c-command restrictions (Kayne 1994). The latter is due to a well-formedness condition and occurs at a point prior to LF.

Zubizarreta argues that the position of nuclear stress in Germanic languages is a result of the interplay of two rules, one sensitive to selectional ordering and one sensitive to ordering defined in terms of asymmetric c-command. In both, the 'lowest' constituent receives the NS under different dimensions, as stated in (20)-(21).

(20) S-NSR: Given two sister categories Ci and Cj, if Ci and Cj are selectionally ordered, the one lower in the selectional ordering is more prominent.

(21) C-NSR: Given two sister categories Ci and Cj, the one lower in the asymmetric c-command ordering (as defined in Kayne 1994) is more prominent.

Only the C-SNR is available in Romance languages, subject to parametrization.

(22) a. Un niño ha *bailado*
A boy has danced
b. Un *niño* ha bailado

(23) a. Un garcon a *dansé*
b. Un *garcón* a dansé

(examples from Zubizarreta 1998: 78)

In German, English and French, defocalised and anaphoric constituents are 'metrically invisible' with respect to the NSR. However, in Spanish and Italian, all phonologically specified constituents are 'metrically visible'. Main prominence on phrase-internal constituents may be associated with a non-contrastive focus interpretation in Germanic, as in the English example below:

(24) [$_{\mathbf{F}}$ **JÓHN**] *ate the apple*
[Who ate the apple?]

In contrast, in Spanish and Italian, the interpretation is contrastive or emphatic, and therefore not compatible with a focus neutral interpretation as shown in the following examples:

(25) [Who ate the apple?]

(26) *[$_{\mathbf{F}}$ **JUAN**] comio una manzana
Juan ate an apple

(27) [$_{\mathbf{F}}$ **JUAN**] como una manzana (non Piero).
Juan ate an apple (not Piero).

(28) *Maria puso *el libro sobre la mesa*
Maria put the book on the table.
What did Maria put on the table?

(29) Maria puso el [$_{\mathbf{F}}$ **LIBRO**] sobre la mesa (no la revista)
Maria put the book on the table not the journal.

(30) **Maria* lee (vs Maria *lee*)
**Maria* baila (vs Maria *baila*)
**Maria* voto (vs Maria *voto*)

(31) J'ai un probleme à resoudre. (* *un probleme* à resoudre)
'I have a problem to solve.'
(examples from Zubizarreta 1998)

The difference is that since all phonological material is metrically visible in Romance they cannot be 'skipped' by the NSR. Therefore, the direct relation between focus and stress is always achieved in the most embedded position of the clause. In cases where the focused element appears in a position different from the NS position (phrase-medial or -initial), stress is assigned via the E/CSR. The position of nuclear stress is unambiguously at the end of the sentence (or phrase), but the scope of contrastive focus in phrase-internal cases is identified by the E/CSR given in (34). Thus, sentences with main prominence on the preverbal subject in Spanish, as in (32)-(33), receive stress via the E/CSR rather than by the NSR, and can only have a contrastive focus interpretation on the preverbal subject, e.g. *Juan* and *Maria*.

(32) a. [$_{\mathbf{F}}$ **JUAN**] llamo por telefono (no Pedro)
Juan phoned (not Pedro)

(33) b. [$_{\mathbf{F}}$ **MARIA**] se comio el pastel (no Marta)
Maria ate the cake (not Marta) (Zubizarreta 1998)

(34) FOCUS/CONTRASTIVE STRESS CORRESPONDENCE PRINCIPLE (E/CSR): A word with contrastive stress must be dominated by every F-marked constituent in the phrase.

Now the challenge is that if one could show that information focus can occupy any higher position in the clause (phrase-internal, left-peripheral), then the E/CSR in (34) fails to maintain its idiosyncratic nature. In this case, we could dispense with Zubizarreta's extra metalinguistic use of the E/CSR and assimilate it to one rule, the NSR, which reintegrates all the different interpretational functions. In this sense,

metalinguistic/discourse entities, such as contrast or corrections, can maintain the independence, in the sense that they do not need to be integrated directly in the grammar (either syntactically or phonologically) in accordance with the discussion in Chapter 3:3.7. In what follows, I will dispense with Zubizarreta's E/CSR.

According to (34), the element that bears the stress of the sentence must be dominated by any focused part of the sentence. Zubizarreta offers the following examples as support for the E/CSR. In (35), with contrastive stress on the adjective, either the adjective or a constituent that exhaustively dominates the adjective may constitute the scope of the contrast. In (36), with contrastive stress on the noun, the scope of contrast is limited to the noun. In effect, the DP that contains the contrastively stressed noun cannot be interpreted as focused, because the DP is marked [F]. So is the PP that it dominates, but the contrastively stressed noun does not dominate the PP. Thus, [+F]-marked constituents may only dominate [+F]-marked constituents.

(35) a. El gato de sombrero {**ROJO**} escribio un libro sobre ratones
the cat of hat red wrote a book about rats
(no el sobrero azul).
(not that of the hat blue).
'The cat with a red hat wrote a book about rats (not the one with a blue hat).'

b. {El gato de sombrero **ROJO}** escribio un libro sobre ratones
the cat of hat red wrote a book about rats
(no el perro de chaqueta **VERDE**).
(not the dog of the jacket green)
'The cat with a red hat wrote a book about rats (not the dog with a green jacket).'

(36) a. El {**GATO**}de sombrero rojo escribio un libro sobre ratones
the cat of hat red wrote a book about rats
(no el **PERRO** de sobrero rojo).
(not the dog of the hat red)
'The cat with a red hat wrote a book about rats (not the dog with a red hat)"

b. *El {**GATO** de sombrero rojo} escribio un libro sobre ratones (no el **PERRO** de chaqueta verde).

(Zubizarreta 1998: 77-78)

What seems to be important in the two sets of examples is that in effect what the E/CSR is trying to say is that stress must always coincide with the most embedded constituent of the focused phrase. Every word that is F-marked dominates the stressed constituent as of that position. Thus, the only difference in the requirements between the NSR and the E/CSR is that in the former, NS must coincide with the most embedded constituent of the clause in Romance as well as Greek, whereas in the latter, contrastive/emphatic stress must fall on the most embedded constituent of the focused phrase. Evidence from Greek, clearly establishes that stress assigned to the focused element does not always have to be rightward or the most embedded in a clause (cf. section 4.5.2). Anticipating the analysis in Section 4.5.3, what is actually required is that the stress assignment to the focused constituent must be as far right as possible within the P-phrase that contains it. In this respect, it can freely occupy any position in the clause, as long as it falls on the most embedded element in the phrase carrying the focus. The evidence from the effects that focus has on prosodic phrasing in Greek also points towards this direction (to be discussed in Section 4.5.2)

Given the above, there seems to be no need to postulate another rule to account for the metalinguistic interpretational/contextual effects of focus. E/CSR is conceptually and empirically redundant, since it derives exactly the same result as the NSR, as long as we assume that an information focus can also stay in a position that is not the most embedded one in the clause. Stress signalling or indicating focus does not have to fall on the most embedded position of the clause: it can fall anywhere as long as it occupies the most embedded position of the focused phrase. If we take such an assumption, then, the two rules proposed in Zubizarreta end up indicating the same result: stress signalling focus must fall on the most embedded position of the focused phrase, wherever the focused phrase is placed in the clause. This is actually the analysis proposed is section 4.5.3. As such, the realization of focus by prosodic means is independent of the syntax of focus. This calls for a view of grammar where prosody and syntax are distinct (Selkirk 1986, 1995; Inkelas & Zec 1995; Neeleman & Weerman 1999; Nespor & Vogel 1986; Szendrői 2001, 2003; Truckenbrodt 1999).

There is an additional challenging inconsistency in the nature of the E/CSR, one concerning its relation to stress-driven (or in Zubizarreta's terms prosodically driven) movement, as mentioned in Section 4.3. In line with Cinque (1993), Zubizarreta assumes a Focus-Prominence Rule (FPR), given in (37), that regulates the relation between prosody and focus. The FPR states that between two sister categories, one focused and the other non-focused, the first must be more prominent than the second.

(37) FOCUS PROMINENCE RULE: The F-Structure of the sentence is constrained by the location of main phrasal prominence: Given two sister categories Ci (marked [+F]) and Cj (marked [-F]), Ci is more prominent than Cj.

Recall that the modularized version of the NSR (extending Cinque's NS account) explains the differences between Germanic and Romance. Now, in certain cases, both the FPR, as given in (37), and the C-NSR, as given in (20) for Romance, apply, yielding conflicting outputs. The former requires a direct mapping between stress and focus and the latter assigns stress to the most deeply embedded constituent. In Germanic languages the grammar resolves this conflict by considering 'defocalized' constituents as metrically invisible, as stated above. However, in Romance, where there is no metrical invisibility, the conflict is resolved by allowing for the defocalized material to undergo movement, so that the focused material in the most embedded position receives stress according to the NSR. Moreover, the focused constituent first moves to the specifier of FocusP, the pre-verbal position in the left periphery. This allows for a remnant type of p-movement of defocalized material — that is, movement of a phrase that includes the trace of a previously removed constituent — to an even higher position. Eventually, the whole process achieves a successful mapping between focus and main prominence, placing focus where stress falls, in the most embedded position.

Nevertheless, imagine a context where focus is found in the most embedded or clause-final position and actually receives a contrastive interpretation, as illustrated in (38a-b) below, which provides a VOS structure:

(38) a. [$_{TP}$ tin askisi tin elise] [$_{F}$ i **MARIA**]] (oxi i Eleni)
the exercise-acc it-cl solved-3sg Maria-nom (not Helen)
'Maria solved the exercise, not Eleni'

b. [$_{TP}$ to fagito to efage [$_{F}$ o **KOSTAS**]] (oxi o Yanis).
the food-acc it-c ate-3sg Kostas-nom (not Yanis)
'Costas ate the food, not John'

If we follow Zubizarreta, we will have to assign to the focused items in (37a-b) stress by the E/CSR. However, the question is: why should this item stay in final position, if it can be assigned stress by the E/CSR in the preverbal or medial position (actually the default case for contrastive stress)? There is no need for the focused item to occupy the clause-final position and for the remnant TP material above it to be p-moved if stress can apply in clause-initial position. In other words, given the existence of the E/CSR, which can apply freely, why resort to 'costly' operations that violate economy considerations discussed in Section 4.3? If the E/CSR applies consistently every time contrastive focus is relevant, then p-movement loses its empirical motivation. To allow for p-movement to operate in cases such as (38) would mean that E/CSR does not apply uniformly to all cases of contrastive focus or we have to postulate that both operations apply at the same time.

The above considerations indicate that one of the two prosodic operations, application of E/CSR or syntactic p-movement needs to be eliminated, since having both operations is empirically and theoretically superfluous. I believe that dispensing with the E/CSR is the most accessible option, since it accounts for a situation which can be easily be accounted for directly by the NSR, involving the application of NSR to positions other than the clause-final. The amalgamation of the two rules and in effect between the two types of stress is clearly consistent with the argument presented in Chapter 3, namely that the interpretive differences between the two foci do not have to be structurally maintained.

To summarize this section, I have discussed the properties of focus with respect to the PF interface and shown that there are not two different types of focus from a prosodic perspective as well. Rather, focus is a single phenomenon at the PF interfaces.

4.5 The Syntax-Prosody Mapping

In this section, I demonstrate the proposed S-P mapping that accounts for the encoding of focus in Greek sentences. In a nutshell, I propose that focus in Greek is associated at the level of prosodic structure via a special set of mapping rules and interpreted off output representations of the mapping from prosody to discourse (cf. section 5.1).

4.5.1 End-based mapping

With respect to the S-P mapping, here, I adopt the position that the grammar represents syntactic and prosodic information in two distinct levels of representation (Chen (1987), Nespor & Vogel & Kenesei (1990), Zec & Inkelas (1990) and Jackendoff (1997), Selkirk (1995), Truckenbrodt (1999) a.o.)).

The rules of phonology proper (i.e. rules that govern phonological patterning, including rules of stress assignment) do not refer directly to syntactic constituents but rather operate on the prosodic structure and, more precisely, on the units of the Prosodic Hierarchy (see Chen 1987; Nespor & Vogel 1986; Selkirk 1984, 1986). The prosodic representation is not derived directly and unambiguously from the syntax, as it does in Minimalism.[134] Phonological rules apply to units of the Prosodic Hierarchy in the prosodic domain, and these units are not always structurally isomorphic to syntactic representations. Syntactic and prosodic representations are related by *mapping rules* that group the terminal elements in the string in a way that creates units which are not in one-to-one relation with the constituents of the syntactic hierarchy. Prosodic units are created by means of a mapping algorithm - that is, a set of rules which determine the type of information accessible from one grammatical module to another. In this respect, prosodic structure is organized in a layered hierarchy of prosodic constituents represented as a bracketed grid. The head of each constituent is represented via a grid-mark 'x' while round brackets indicate a constituent's boundaries. Each head projects into the next higher layer but only some are selected as heads for the constituents in the higher layer.

In (39) below each lexical item is parsed into a phonological word headed by the most prominent syllable. Phonological words are in turn parsed into phonological

[134] This approach goes against Cinque's (1993) stress-based account and accounts such as those of Zubizarreta (1994, 1998) and Reinhart (1995), who claim a syntax-based NSR. However, it agrees with stress-based theoretical accounts such as Szendrői's (2001).

phrases (P-phrases) headed by the most prominent phonological word and P-phrases are parsed into an intonational phrase (I-Phrase) headed by the most prominent P-phrase. The utterance phrase (U-phrase) takes in the whole sentence and corresponds to the only available I-Phrase (cf. also discussion in Chapter 1:1.4).

(x)	utterance phrase (U-phrase)
(x)	intonational phrases (I-Phrase)
(x) (x)	phonological phrases (P-phrase)
(x) (x) (x)	phonological words (PW)

(39) o Nikos kitakse ti Maria
Nikos-nom looked-3sg the Maria-acc
'Nikos looked at Maria'

The prosodic representation above needs to satisfy two conditions. The first establishes a one-to-one relation between prosodic constituents and their heads (Hayes 1995).

(40) *Headedness*: each prosodic constituent has one and only one head.

The second organizes prosodic constituents into hierarchical layers, with each layer exhaustively parsed into the next higher one in accordance with Selkirk's Strict Layer Hypothesis (1984, 1986, 1995).

(41) *Strict Layer Hypotheis*: a prosodic category of one level is exhaustively parsed into constituents of the next-lower level; those next-lower level constituents are all of the same type.

We follow Selkirk (1986) in assuming the following mapping algorithm in (42) for the formation of a P-phrase (φ) (also adopted in Neeleman & Reinhart 1998):

(42) Φ-FORMATION
Close φ when encountering] $_{XP}$

The procedure in (42) has the effect that the right edges of phonological phrases coincide with the right edges of syntactic phrases. Selkirk (1995) claims that there is a predisposition towards lexical categories. More specifically, Selkirk proposes that only lexical categories and their projections, and not functional ones, are visible to the mapping rules. There is considerable empirical evidence in support of such a restriction, which complements Nespor & Vogel's (1986) *non-visibility* of empty categories and their projections. Prosodic constraints refer to lexical elements (L^0 elements and their projections, L^{max}) but not to functional elements (F^0 elements and their projections, F^{max}) nor to empty categories and their projections, in accordance with the Lexical Category Condition (LCC) of Truckenbrodt (1999: 226).[135]

In Optimality Theory (e.g., McCarthy & Prince 1993; Prince & Smolensky 1993), edge-based rules have been converted into McCarthy & Prince's (1993) Generalized Alignment constraint system. Each alignment constraint represents a requirement on the matching of morphosyntactic with prosodic edges. Selkirk (1995) has proposed the following constraints on edge-alignment of syntactic phrases with phonological phrases:

(43) EDGE-ALIGNMENT CONSTRAINTS:

a. Align-XP,L: Align (XP, L; PPh, L)
'For each XP, there is a PPh such that the left edge of XP coincides with the left edge of PPh.'

b. Align-XP,R: Align (XP, R; PPh, R)
'For each XP, there is a PPh such that the right edge of XP coincides with the right edge of PPh.'

Truckenbrodt (1995, 1999) has offered a convincing argument for the necessity of including a cohesional constraint WRAP-XP, stated in (44), in the family of interface constraints. This constraint governs the parsing of syntactic structures into P-phrases. In many languages, a major syntactic phrase preserves its integrity and is mapped into a single P-phrase. In accordance with the LCC, the constraint penalizes separate phrasing of lexical projections but, interestingly, permits the split up of functional

[135] This later condition includes Selkirk's *Categorical Invisibility of Function Words* (1984: 337), and emphasizes the invisibility of function words with respect to the application of the prosodic algorithms.

ones. His argument builds on the phrasing differences of Bantu languages. WRAP-XP will not remain part of the current analysis on Greek.[136]

(44) WRAP-XP: Each XP is contained in a phonological phrase.[137]

Moreover, in Truckenbrodt's analysis, one of the lexical items in a lexical projection XP must be promoted to head of a P-phrase. The head of the P-phrase counts as 'phrasal stress' (StressXP). In section 4.5.3.2-4.5.3.3, I will show how this constraint can be relevant in showing how post-focal material is rendered prosodically unparsed.

I thus follow the main insights of Selkirk (1995) and Truckenbrodt (1995, 1999) in maintaining the idea that syntactic structure is parsed into prosodic constituents and that the heads of these constituents in turn determine the rhythmic grid eventually responsible for the position of main stress. Once the mapping rules are applied, syntactic structures can no longer be used to condition phonological rules. The theory predicts that two sentences with same linear sequence of lexical elements but different syntactic structures will be ambiguous if their prosodic structures are

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[136] The exact effects of the WRAP-XP constraint are inconclusive for Greek. Therefore, it will not remain part of this analysis because as we will see in the following section it cannot be applied to the data presented there. Revithiadou (2004) argues that the effects of WRAP-XP in Greek are revealed mainly in constructions with multiple complements to the head of an NP such as the ones in (1). In (1a), both the NP in genitive *tis artemis* and the PP *sta erotimata* are complements to the NP *tis apantisis*. This structure minimally contrasts with (1b) where the PP *sto sirtari* is an adjunct. Interestingly, the PP-adjunct phrases by itself whereas the PP-complement incorporates with the other constituents of the NP into one P-phrase. This difference is explained if the WRAP-XP constrain is effective.

(1) **a.** [$_{NP}$Det N] [$_{IP}$ V [$_{VP}$ tV [$_{NP}$ Det NP$_{GEN}$ $_{PP}$ P NP]]]]
/i maria psaxni tis apantisis tis artemis sta erotimata /
the Maria-nom.sg look for.3sg.PRES the Artemi.gen.sg the answer-acc to-the question-acc.pl
'Maria looks for Artemi's answers to the questions'
[i maria]φ [psaxni tis apandisis tis artemis **s**ta erotimata]φ WRAP-XP
b. [$_{NP}$Det N] [$_{IP}$ V [$_{VP}$ tV [$_{NP}$ Det NP$_{GEN}$ [$_{PP}$ P NP]]]]]
/i maria psaxni tis apantisis tis artemis sto sirtari /
the Mary-nom.sg look for.3sg.PRES the answer.ACC.pl the Artemi.GEN.sg in-the drawer.ACC.sg
Mary looks for Artemi'ss answers in the drawer
[i maria]φ [psaxni tis apandisis tis artemi**s**]φ [**s**to sirtari]φ * WRAP-XP / √ ALIGN-XP,R

[137] Revithiadou & Spyropoulos (2009) give an abstract example to clarify how exactly the end-based algorithm applies. They assume a syntactic string, like the one in (1). The p-boundaries below the string denote the results of the application of ALIGN-XP,L (a), ALIGN-XP,R (b) and WRAP-XP (c). Differences in phrasing across languages result from different rankings of the relevant constraints.

1. [V NP PP]$_{VP}$ syntactic string
a. [ ]φ [ ]φ (*sic*) [ ]φ p-phrasing due to high-ranking of ALIGN-XP,L
b. [ ]φ [ ]φ p-phrasing due to high-ranking of ALIGN-XP,R
c. [ ]φ p-phrasing due to high-ranking of WRAP-XP

equal (cf. Nespor 1993, 1996). Non-isomorphism between syntactic and phonological structures is thus established.

4.5.2 Focus Effects on Prosodic Structure

New information focus in Greek is encoded prosodically by means of prosodic constituency (Revithiadou 2004; Revithiadou & Spyropoulos 2009) and prominence (Baltazani & Jun 1999, Baltazani 2002b, Arvaniti & Baltazani 2005, Arvaniti *et al* 2000). Narrow focus has effects on prosodic phrasing. Baltazani (2002a, b) shows that there is an asymmetry in the prosodic marking of given information depending on its relative position to focus. Given information is deaccented post-focally but preserves its pitch accents pre-focally (Baltazani 2002a, b).

Revithiadou (2004) and Revithiadou & Spyropoulos (2009) argue that narrow/ contrastive focus inserts a left phonological (p-) boundary at the left of the focused constituent. She proposes through experimental evidence that the presence of a p-boundary also triggers leftward rephrasing of the string. Consider the following examples from Revithiadou (2003, 2004):

(45) *Focus and rephrasing (Revithiadou 2004, Revithiadou & Spyropoulos 2009)*

a. <u>Vowel fusion</u>

/ o fedon paringile ANGISTRIA/

[o fedo***n*** ***b***ari gile]φ [ANGISTRJA]φ — FOCUS phasing

[o fedo**n**] φ [**p**aringil ***œ***gistrja]φ — End-based mapping

Phaedon ordered HOOKS/hook

b. <u>C-degemination</u>

/o panos γrafi ikositeseris SONATES/

[o pano***z*** ***γ***rafØ ***i***kositeseri**s**]φ [**S**ONATES]φ — FOCUS phrasing

[o pano**s**]φ [γrafØ ***i***kositeseri ***s***onates]φ — End-based mapping

Panos writes/ composes twenty-four SONATAS/sonatas

Example (45a) and (45b) compare the phrasings of sentences rendered with narrow/contrastive focus on a particular constituent with the phrasings of the same

sentences rendered with NSR in accordance with the end-based mapping.[138] In (45a) focus on *angistrja* blocks non-high vowel fusion which, nevertheless, applies between the verb and the NP-object as correctly predicted by the end-based mapping. Similarly, focus blocks C-degemination in (45b). Based on similar evidence Revithiadou (2004) concludes that focus changes the dynamics of phrasing in a sentence.

Hence, in Greek the narrow focus constituent inserts a left p-boundary, which intonationally is realized with a L+H* nuclear pitch accent (Baltazani 2002b), thus, triggering leftward rephrasing of the string. In effect, with respect to prosodic constituency (phrasing): focus signals the beginning of a new P-phrase:*φ*. With respect to prosodic prominence: focus is the most prominent consituent on the P-phrase or I-phrase level (cf. Baltazani & Jun 1999, Baltazani 2002). Consequently, in Greek, focus restructuring proceeds to a direction opposite to syntactic recursion (contra to Kanerva 1989, 1990; Frascarelli 2000 for Italian).

Based on the above and according to Selkirk's (1996, 1997 et seq) proposed model of InfoStrcucture-phonology interface which supplies the grammar with the Align(Info, PCat) family of constraints, we can assume that the constraint ALIGN-FOCUS,L in (46), which ensures the mapping of some edge of a focus constituent with some edge of a prosodic unit, is applicable in Greek. The constraint ALIGN-FOCUS,L guarantees that information structure requirements are met on the phrasal structure of a given sentence. In other words, ALIGN-FOCUS,L ensures that the

[138] The examples in (41) do not satisfy WRAP-XP which was dismissed earlier from the analysis in section 4.5.1. The application of additional morpho-phonological process such as the application of *sandhi* rules in Greek make the detection of WRAP-XP even harder. All syntactic analyses of Greek (Philippaki Warburton, 1987, 1989; Horrocks, 1994; Alexiadou & Anagnostopoulou, 1998; Alexiadou, 1999) argue that the verb raises to the head of IP leaving behind a silent copy *tV* (Chomsky, 1995). Given the Lexical Category Condition (Truckenbrodt, 1999: 226), neither the IP nor the projection of an empty head can project a p-boundary. As expected, therefore, the verb phrases together with its complement in (i), a prediction that is verified by the application of V-degemination in this environment, *dinØ isxi*. Furthermore, the blocking of s-voicing between the NP-subject *to fos* and the verb *ini* in the same sentence hints at the presence of a P-phrase boundary at the right edge of the NP-subject. An immediate consequence of V-raising to the head of IP is that it is impossible to detect the effects of WRAP-XP within the VP.

(i) $[_{NP}$Det N$]$ $[_{IP}$ V $[_{VP}$ t V $[_{NP}$ Det N $[_{PP}$ P NP$]]$
/to fos dini isxi sti mixani/
the light.NOM.sg give.3sg.PRES power.ACC.sg to-the engine.ACC.sg
'the light gives power to the engine'
[to fo**s**]φ [din**Ø*i***sxi]φ [sti mixani]φ WRAP-XP not attested

demands of information structure will be imposed on the phrasal structure of a given sentence:

(46) ALIGN-FOCUS,L
Align the left edge of a focus constituent in Information structure with the left edge of a P-phrase in the prosodic structure.

With regards to the phrasing of pre-focal material, the sentences in (45a-b) clearly show that the DP-subject and the verb are grouped together into one P-phrase according to the dictations of prosodic branchingness.[139] This entails that when Information structure and phonology interface constraints impose certain requirements on the prosodic constituency of a sentence, the matching of syntactic boundaries with prosodic boundaries seems to be totally ignored and non-isomorphism arises. Recall that according Baltazani (2002a, b) pre-focal material may carry pre-nuclear pitch accents. However, focus has dramatic effects on post-focal material; it is reported de-accented and possibly de-phrased.

4.5.3 Aligned versus Misaligned Mapping

Assuming the framework of Prosodic Phonology introduced in Section 4.5.1, I propose that two types of rules are operational in the mapping process: default alignment rules and focus-related or misalignment rules. The former are responsible for the assignment of main stress in the unmarked cases and the identification of the sentence focus. The latter identify focus positions other than clause-final ones - for example, clause-medial and left-peripheral - and in the case of stress assignment they result in a misalignment between syntax and prosody. In effect, according to the two types of mapping, the two representations, syntactic and prosodic, may be either aligned or misaligned. The mapping process decides and constrains which syntactic trees can be successfully mapped to a given prosodic tree and vice versa.

In the unmarked cases, which I will call S-P Alignment or S-PA, a well-formed syntactic representation can be paired up with a well-formed prosodic representation in a way that the S-P mapping is completely satisfied. This is the case

[139] For prosodic branchingness see: Liberman & Prince (1977), Chen (1987), Nespor and Vogel (1986), Zec and Inkelas (1990).

where the right edge of prosody meets the right edge of syntax, and where NSR is applied to the most embedded syntactic constituent.

However, focus does not always appear rightmost in the syntactic structure but it can appear in sentence medial or left peripheral position. In cases where an element other than the most embedded in the syntactic structure needs to be focused, the misaligned mapping ensures that the element in question appears at the relevant edge of the phonological domain to receive main stress. I call this mapping the S-P Misalignment or S-PM.

Hence, the S-PA rules are responsible for enabling the signalling of focus via stress in final focus structures, while the S-PM rules enable the marking of focus in non-final focus structures. The main contribution of the S-PA and S-PM mapping rules lies in predicting and calculating the position of focus in the prosodic structure. Their operation is triggered by the prosody-discourse mapping which imposes the requirement that the focus position matches the position of stress or signals focus via stress. Let me elucidate further.

Imagine that we have a scenario where discourse requires a certain interpretation - a focus interpretation - to be satisfied. The question that emerges is the following: based on the above description, how is focus signaled via stress under the proposed mapping rules and how is focus interpretation encoded?

Anticipating the discussion to follow, I argue that what gives us focus in Greek is a prosodic condition: a result of the application of the S-PA and S-PM mappings.

Recall the discussion section in 4.5.1, where it was assumed that a prosodic phrasing algorithm is effective in Greek: an end-based algorithm, which dictates the mapping of the edges of syntactic constituents with prosodic ones (Selkirk 1986, 1995, et seq., Truckenbrodt 1995, 1999). Hence, I assume that the S-P mapping is subject to end-based mapping rules which align the (right) edge of syntactic phrases with the (right) edge of phonological phrases (P-phrase).

In particular, I argue -by and large- that the mapping rules in (47) are operative in Greek on the domain of syntactic and P-phrases and on the domain of the utterance with the I-Phrase (see also section 4.5.3.1 and 4.5.3.2 for a more detailed illustration of the rules):

(47) *S-P mapping (Greek)*

Align the right edge of a syntactic phrase with the right edge of a P-phrase.

Align the right edge of an utterance with the right edge of an I-phrase.

The S-P mapping rules in (47) are substantiated by means of the S-PA and the S-PM. Consider the examples in (48) below and the tree in (49) for illustration:

(48) a. [$_{\mathbf{F}}$ i **MITERA**] katharise to spiti **S**VO

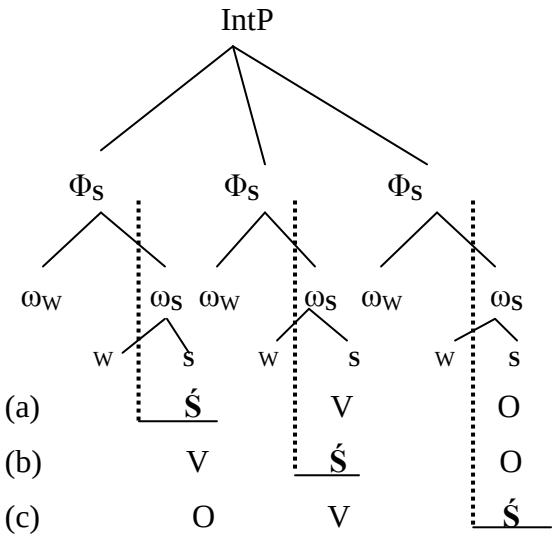
the mother-nom clean-3sg/PS the house-acc

'The mother cleaned the house'

b. to-cl katharise [$_{\mathbf{F}}$ i **MITERA**] to spiti clV**S**O

c. (to spiti to-cl katharise) [$_{\mathbf{F}}$ i **MITERA**] OclV**S**

(49)



When the constituent that needs to be stressed appears in the sentence final position the S-PA mapping operates and aligns the right edge of prosody with the right edge of syntax, as shown in example (48c), and also represented in the tree diagram in (49c). However, when the constituent that receives the stress is not in the final syntactic position but appears in the medial or clause initial position, then the S-PM operates and aligns the non-final focus element in syntactic structure with the right-edge of a phonological phrase, that is, the rightmost most prominent constituent of a phonological phrase, which is not final in the clause but it is final in the prosodic

structure.[140] The effects of the S-PM are facilitated by prosodic conditions (a) the directionality of stress assignment, (b) the prosodic and discouse status of post-focal material and (c) the focus effects induced on prosodic phrasing (as discussed in section 4.5.2). I will shortly shed light on these conditions and how they contribute to the overall proposal. In other words, in cases where an element other that the most embedded is to be focused, the S-PM ensures that the element in question appears at the relevant edge of the phonological domain to receive main stress, as it will be discussed in sections 4.5.3.2 and 4.5.3.3 (see also examples (48a) and (48b) and their representation in (49a) and (49b) respectively)).[141]

So, looking at the structure in (49) the question that immediately arises is the following: Under which underlying assumptions do we arrive at in relation to the tree in (49) and the (mis)-alignment processes? Moreover, under which conditions is the focused constituent considered final in the prosodic structure in non-final focus instances? How can the S-PM ensure that the element in focus appears at the relevant edge to receive main stress?

I make the following assumptions with regards to the prosodic encoding of focus in Greek: First, in Greek, default stress prominence is rightmost within the P-phrase and rightmost within the I-Phrase:

(50) Greek Sentence Stress Rule (GSSR)
Assign stress prominence to the rightmost element of the clause.

The widely accepted constraints in (51) are responsible for the emergence of rightmost sentence stress.

[140] The S-P mapping proposed in this Chapter further supports the view of grammar discussed in Chapters 1 and 3, in which the different components are autonomous, self-contained and only related by mapping rules (in the spirit of Jackendoff 1997, 2002). In this type of architecture, the idea that focus is universally marked by pitch accent in stress languages is reflected in the discourse-phonological constraints proposed in theories of focus (Chen 1987; Nespor & Vogel 1986; Zec & Inkelas 1990; and Jackendoff 1972; 1997; Selkirk 1995; Büring 2003; Truckenbrodt 1995, 1999; Samek- Lodovici 2005, 2006; Fery & Samek-Lodovici 2006).

[141] In the above tree-diagram, I use a metrical tree annotation (cf. Liberman 1979 and Liberman & Prince 1977). Metrical trees are annotated with Strong (S) and Weak (W) labels. By assumption, S is assigned on the top node. The main stress falls on the node that is only dominated by S-s, which is indicated in bold in the diagram.

(51) a. RIGHTMOST-φ: The head prosodic word (PW) is rightmost in a P-phrase.
b. RIGHTMOST-IP: The head P-phrase is rightmost in an IP.
(based on EDGEMOST, Prince & Smolensky 1993; Prince 1983).

For instance, for both the SVO/VSO orders, the most rightmost element will be the object:

(52) *Default sentence stress in SVO/VSO orders:*

| | | |

Consequently, it might be the case that focus induces prosodic restructuring of pre-focal material but the focused constituent still remains rightmost within the I-Phrase that contains it receiving the nuclear stress, as a result of the S-PM process (see schema below illustrating the prosodic phrasing of focus in Greek). This is exactly what happens in examples (48a-b) and (49a-b) above; (48a) and (49a) shows a case of left peripheral focus, (48b) and (49b) a case of string-medial focus.

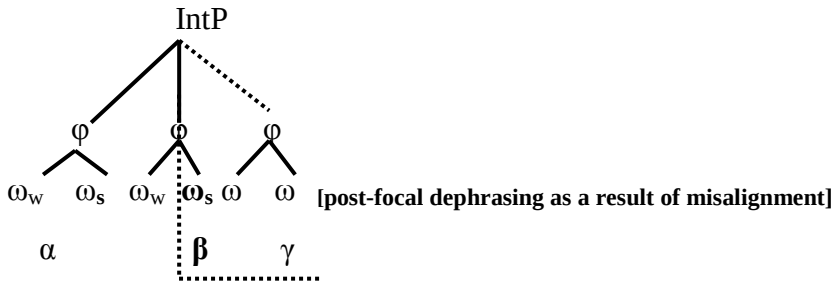


Figure 1: Focus induced prosodic phrasing in Greek

As shown in Figure (1), the prosodic constituency is altered in such a way so that the focused constituent closes off the right edge of a phonological phrase, other than the one that is final in the clause. The post-focal material are re-phrased and integrated into the larger phonological or intonational phrase corresponding to the clause; they do not form their own phrases (see in Figure 1 the absence of any labelling strong or weak from post-focal material). Since in Greek post-focal material is de-accented, I assume that although focus inserts a leftward p-boundary inducing a leftward rephrasing of the string, this boundary closes-off as soon as it encounters the immediately de-accented material. Since no accent is pronounced on the post-focal material, there is no boundary closing off the phonological phrase including the focus. I also assume that there is a 'conceivable' (non-feasible) rightward boundary since the misalignment process predicts that the focus will always be rightmost within the p-phrase of the I-Phrase that contains it, since it is the last accented material. Hence, main stress is not always rightmost but only as far right as possible, as the result of the *misalignment* process.[142]

[142] This is one of the advantages of the proposed mapping, since it immediately captures the above generalization. Such a generalization is nevertheless problematic for syntactic approaches on stress (Cinque 1993) under parametric analyses, so in a way it challenges them, in that focus identification is the result of the simultaneous assessment of syntax and prosody, where mapping rules allow for the

The main contribution of the S-PA and S-PM processes in this proposal is that they predict the position of focus prosodically satisfying requirements of the prosody-discourse mapping formalized in Reinhart's stress-focus correspondence principle. Quite importantly, the application of the S-PA and the S-PM allows this proposal to account for all the possible focus positions in a uniform fashion: a unification of focus positions across the clausal structure. Furthermore, it crucially predicts that the outputs of the S-P mappings that feed into the information component (part of C-I interface) underdetermine the position of focus syntactically and interpretationally (see sections 4.5.2.1-4.5.2.3).

From a syntactic point of view, the proposed analysis predicts that the syntactic quality of the focus position in prosodic structure is underdetermined: the element that will bear the stress is syntactically underdetermined (it can be a subject, a verb, an object); the same phonological word can be realized by a number of word order constituents, since every terminal node can be occupied by a different constituent. This is the first level of underdeterminacy.

The other level of underdeterminacy is related to prosody: whether focus appears on the left, medial, or right periphery carrying the same interpretation, as shown in (49), is not relevant as regards to the actual position for the realization of focus, namely as far as focus interpretation is concerned, since it will always coincide with the right edge of the phonological phrase (or intonational phrase) that contains it as a result of the S-PM. It thus follows that the underdeterminacy with respect to focus interpretation discussed in Chapter 2: 2.4.1 is a consequence of the fact that focus interpretation runs off prosodic structure.

The resulting structures of the S-P mapping contain all necessary information to serve as the input to the interpretative mechanism described by the principle in (1), which applies at the C-I interface. The S-P mapping output representations feed

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acceptable structures provided that the interactions of syntactic and prosodic representations will satisfy these mapping rules. Samek–Lodovici (2005) convincingly argues that any syntax-based approach that determines nuclear stress has the serious drawback of requiring the identification of the position of stress earlier than the syntactic operations responsible for stranding focus in the position of stress. In this way, they have no choice but to refer to a syntactic definition of main stress determined in a cyclical fashion until focus and stress are matched in the same position. In contrast, in the mapping operation proposed in Samek Lodovici (2005), the syntactic and prosodic components are assessed simultaneously and the mapping rules will allow for the acceptable structures provided that the combination of syntactic and prosodic representations will satisfy these mapping rules. For instance, in cases of string-middle focus construction, it will not matter for the prosodic operation of stress assignment that the element is not the rightmost within the syntactic structure, as the grammar has two distinct prosodic and syntactic representations.

directly into the prosody-discourse mapping, whereby focus interpretation is assigned to the relevant constituent (see sections 4.5.2.1-4.5.2.3).

4.5.3.1 The SPA of the Right Periphery

In this section, I will begin by illustrating the S-PA of the right periphery, that is, the prosodic encoding of focus realized in the final position. With regards to this mapping, I assume, following Selkirk (1986, 1995), that it applies in the following manner[143]: In particular, I propose that the mapping between syntactic and phonological phrases is subject to the default Alignment Mapping Rule given in (53).

(53) SYNTAX-PROSODY MAPPING OF PHRASES (GREEK)
Align the right edge of a syntactic phrase with the right edge of the P-phrase.

At the level of the clause or utterance and I-Phrase, the following principle is operative in Greek:

(54) SYNTAX-PROSODY MAPPING OF CLAUSES (GREEK):
Align the right edge of the IP (clause) with the right edge of the I-Phrase corresponding to that IP.

The mapping rules (53) and (54) capture the default end-based mapping in Greek where a default phrasing pattern of the prosodic structure of a given input string occurs.[144]

[143] See also Inkelas & Zec 1995, Neeleman & Weerman 1999, Nespor & Vogel 1986, Szendrői 2001, Truckenbrodt 1999.

[144] Revithiadou (2004) shows that there is variation in phrasing due to the parallel existence of two phrasing grammars: the end-based grammar (EBG) and the wellformedness-based grammar (WBG). The former proceeds by looking at syntactic structure and accordingly matching prosodic edges to syntactic edges (cf. Selkirk 1978, 1982 *et seq.*; Truckenbrodt, 1995, 1999) whereas the latter proceeds by paying attention to prosodic structure alone and, subsequently, grouping pairs of prosodic words into the same phonological phrase. In particular, WBG aims at enhancing the eurhythmicity of the utterance by organizing prosodic constituency on the basis of length, weight balancing and branchingness. However, often this is performed at the expense of pursuing an isomorphic mapping between morphosyntactic and prosodic constituents which, in contrast, is what the EBG usually strives for. Moreover, the WBG has been found to be quantitatively prevalent and characteristic of both slow and faster speech rates. This set of facts naturally raises a question with respect to how pre-focal material is prosodically organized which is beyond the scope of this thesis.

As far as Prosodic Phonology is concerned, I propose nuclear stress in Greek is assigned as follows:

(55) NSR (GREEK):
Assign main stress on the rightmost phonological word of the rightmost P-phrase of the (rightmost) I- phrase.

Under wide focus, the rightmost P-phrase within the I-Phrase is the intonationally most prominent and receives main stress.

Let me start by illustrating the application of the S-P mapping together with the stress assignment rules with the example in (56a) which has the focus set in (56b).

(56) a. [o Yanis] [pire tilefono] [$_F$ ti **MARIA**] ke tis ipe…
the Yanis-nom took-3sg phone the Maria-acc and her-cl told-3sg
'John called Maria on the phone and told her...
b. Focus set :{DP_{DO}, VP, IP}

The Focus set in (56b) means that the Greek sentence in (56a) can be also uttered as the answer to the following questions in (57a-b), corresponding to VP and IP foci respectively.

(57) a. What did John do?
b. What happened? / Any news?
c. o Yanis pire tilefono [$_F$ ti **MARIA**]
the Yanis-non take-3sg/PS tilefono-acc the Maria-acc
'Yanis called Maria'

(58)	{(o Yanis	pire	tilefono) φ	(ti **MARIA**)φ}	
	{[		]	**[x_{φ} }**	I-phrase
	[[x_{ω}		x_{ω}]	**x_{ω}**]	P-phrase[145]
	]				PW
	(x_{ω})	(x_{ω})	(x_{ω})	(x_{ω})	
	(x)	(x)	(x)	(x)	
	o Yanis	pire	tilefono	ti **MARIA**	

In the prosodic representation in (58), the alignment mapping prosodic rules in (53-54) derive the representation in (58) for the sentence in (56). Relevant to these rules is the fact that in (58), *MARIA* according to the rule in (55) is the rightmost syntactically most embedded constituent and the rightmost phonological word in the rightmost P-phrase of the I-Phrase. Focus signals the beginning of the most prominent P-phrase of the utterance; in accordance with the ALIGN-FOCUS, L interface constraint in (46), the left edge of the focus constituent is aligned with the left edge of a P-phrase in the prosodic structure (at the level of the I-Phrase). This means that (narrow) focus inserts a left p-boundary at the left of the focused constituent and forms its own P-phrase (Revithiadou 2004). Recall that according to Baltazani (2002) pre-focal given material preserve their prosodic characteristics (i.e. pitch accents) and form their own P-phrase.

Given the NSR in (55), **MARIA** will receive the main stress of the clause. In particular, nuclear stress in Greek is assigned to the rightmost phonological word of the rightmost P-phrase of the (rightmost) I-phrase, according to (55). Under a wide focus reading, e.g., the reading compatible with the question in (57b), again, the rightmost P-phrase within the I-Phrase will be the prosodically most prominent and will receive the main stress. As regards to the stress-focus correspondence and focus ambiguity facts, it is predicted that (56) has the focus set indicated in (56b): {DP_{DO},

[145] An alternative phrasing where the verbal phrase is adjoined to the P-phrase of the object *ti Maria* could also be possible. The existence of multiple phrasing options for a given syntactic string has long been acknowledged in the literature (Nespor & Vogel 1986, Ghini 1993, among others). More recently, studies on phrasing in Romance (Sandalo & Truckenbrodt 2001, Elordieta et al. 2003, 2005) and other languages (Jun 2003 for Korean) have underlined the relevance of notions such as branchingness, weight balancing and length of phrasing.

VP, IP}.[146] Hence, the proposed S-PA mapping rules and the NSR derive an utterance with unmarked intonation which may induce wide scope reading deriving different possible focus interpretations.

Going over the main points, in this section I have accounted for the right-peripheral focus construction in Greek. These are by definition the default cases, as stress is assigned to the rightmost constituent in Greek. The S-PA proposed here is the domain of application for the default alignment mapping rules. The match is direct and creates no complications, since it is one-to-one, the prosody being the image of syntax. However, the outcome of such mapping is not always one-to-one, since the interpretations we derive from the default alignment mapping are one-to-many, - right-peripheral focus is broad and projects (cf. SVO structure). Hence, a particular utterance carrying right-peripheral focus, may have - under a different context question induced by a given intonation - more than one interpretation, the Focus Set of the utterance (in Reinhartian terms).

The ambiguity that arises is not subject to the Focus Projection rules which are syntactically constrained as in Selkirk (1995). In this respect, I follow Schwarzschild (1999) in that F-markers are syntactically unconstrained and freely assigned[147]. F-

[146] The way this ambiguity delivers into the information component will be discussed in Chapter 5.

[147] Schwarzschild (1999) argues that we have to abandon the focus projection algorithm in favor of syntactically unconstrained distribution of F-markings. F-markers must be freely assigned, subject to the Basic Focus Rule (Selkirk 1984, 1995). The asymmetries between heads and arguments and their accenting, as they are stated, following from the relation between accent and IS face with problems. For instance, there are cases of head-argument where neither the F-marker on the head nor on the argument entails F-marking. In addition, cases where discourse does not require F-marking on either the head or the argument. He argues that F-marking is constrained instead by a set of violable and ranked non-syntactic constraints. The constraints he proposes are the following:

(1) Schwarzschild (1999, p.173) Constraints on F-marking:
a. GIVENness: A constituent that is not F-marked is GIVEN.
b. AvoidF: Do not F mark.
c. FOC: A Foc-marked phrase contains an accent.
d. HeadArg: A head is less prominent than its internal argument.

The definition of givenness as stated in (1a) and the economy principle associated with the AvoidF constraint, allow him to predict how the correct distribution of accents and F-markers is obtained. However, his argument based on the economy principle is not really fully developed rather being a stipulation and cannot be assumed to follow from the AvoidF constraint. In an attempt to justify that AvoidF is the constraint that decides and chooses on the correct representation, he provides evidence like (2) where he argues that 'AvoidF presumably chooses (2b) as the representation of the utterance in this context, since in that case the least material is covered by an F-marker' (p.168):

(2) Context: {Jack said the American President drinks. What did Gilles say?}
a. He [said the [FRENCH]$_F$ President drinks]$_F$
b. He said [the [FRENCH]$_F$ President drinks]$_F$

marking is subject to the Focus Interpretation principle and similar to Schwarzschild's (1999) FOC: A Foc-marked constituent contains an accent. In my interpretation of the above, the focus related stress rule f-marks the most prosodically prominent constituent.

At this point, an important remark with respect to the S-PA mapping is in order. Right peripheral focus is also evident in other structures. For, instance a VSO structure with focus on the object, an OVS structure with focus on the subject and an OSV structure with focus on the verb. In principle, anything can be right peripheral and receive nuclear stress.[148] Consider the following examples in (59):

(59) a. i Vasso agorase [$_{F}$ **SPITI**] SV**O**
the Vasso-nom buy-3sg/PS house-acc
'Vasso bought a **house**'

b. spiti agorase [$_{F}$ i **VASSO**] OV***S***
house-acc buy-3sg/PS the Vasso-nom
'**Vasso** bought a house'

c. i Vasso to spiti [$_{F}$ to **AGORASE**] SO**V**[149]
the Vasso-nom the house-acc cl-buy-3sg/PS
'Vasso **bought** a house'

This means that the S-PA restricts the realization of focus by the application of prosodic rules and predicts the following generalizations on the way the syntax-prosody interactions feed into the information component. It predicts a structural mismatch, a non-isomorphic relation between syntax and information structure which I propose under the generalizations in (60). In other words, it is predicted that the S-IS underdeterminacy with respect to focus interpretation is a consequence of the fact that

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It is quite unclear though how AvoidF works in the above cases, as a selectional criterion for the correct interpretation since it seems questionable how it bears on the size on the focused material, when it only calculates the number of F-markers and selects as optimal the representation with the fewest *F-markers*, neglecting the assumption implied by (2a) and (2b) that the representation with the fewest *nodes* in a tree is what matters.

[148] Although we will see a few important exceptions in Chapter 5 with respect to V-initial orders in Greek.

[149] The SOV structure is not normaly a felicitous structure with rightmost stress on the Verb. However, the preposing of the subject from the vP internal postion to a topic position under a topic interepretation and the clitic left disclocated object allow this structure to be felicitous in a context wher the verb is empatically or contrastively focused.

focus interpretation runs off prosodic structure. Consider the following generalizations:

(60) **S - P MAPPING**

Generalization 1: One word order under the same stress pattern may result in ⇨ Distinct information structure partitions.

Generalization 2: Under the same stress pattern (e.g. right peripheral), different syntactic structures may result in ⇨ Distinct information structure partitions

Thus, while it is true that one syntactic structure under the same stress pattern will result in distinct information structure partitions, it is also true that distinct syntactic structures under identical rightmost stress will also result in distinct information structure partitions. It follows that although the S-PA mapping predicts that stress assignment is always one-to-one in relation to focus and further constraints the identification of focus, the way the outcome of the S-PA 'feeds' into the information component results in underdeterminacy as regards to the encoding of focus interpretation.

We now turn to see what happens when the string-medial or non-final constituent is focused.

4.5.3.2 The SPM of Middle Focus Constructions

Turning now to the analysis of sentence-medial (non-final) focus constructions, , we adopt for Greek the phrasal stress rules under (61) and (62) which assign rightmost prominence to P-phrases and rightmost prominence to I-Phrases (adopted by Hayes & Lahiri 1991):

(61) P-PHRASE STRESS RULE (GREEK)

Within the P-phrase, the rightmost non-clitic word is prosodically the most prominent carrying the intonational nucleus of the phrase.

(62) I-PHRASE STRESS RULE (GREEK)

A P-phrase bearing narrow focus receives the most prominent stress of its I-Phrase.

According to Hayes & Lahiri (1991) these rules are based on the view that all languages have normal, default stress rules, such as the ones in (55) which may be overridden in cases of narrow non-final focus. Arguments for this general view of phrasal stress may be found in Ladd (1980), pp 50-99.

Furthermore, as far as Prosodic Phonology is concerned, the focus induced prosodic re-phrasing is defined as follows (cf. Section 4.5.3):

(63) In Greek, a P-phrase boundary must be inserted at the left edge of the focused constituent.

In this respect, amongst Selkirk's (1995) Align (Info, Pcat) family of constraints, the constraint ALIGN-FOCUS, L in (46) is applied to ensure the mapping of some edge of a focus constituent with some edge of a prosodic unit (repeated here in (64)).

(64) ALIGN-FOCUS, L
Align the left edge of a Focus constituent in information structure with the left edge of a P-phrase in the prosodic structure.

Given (63) and (64), I propose in place of the NSR the following modified misalignment mapping rule in (65) to account for non-final focus-related structures:

(65) **MISALIGNMENT MAPPING NSR** (GREEK):
Within the I-Phrase, nuclear stress falls on the *rightmost* intonationally most prominent P-phrase, the left edge of which must be aligned with the left-edge of the focused constituent in the syntactic structure.

The above rule predicts that in a narrowly focused constituent in clause-medial position, nuclear stress will fall within the intonationally most prominent P-phrase of the I-phrase. In such cases, the last phrasal stress will be the strongest. Hence, in cases where the narrow-focused constituent is internal to the I-phrase, the nuclear stress

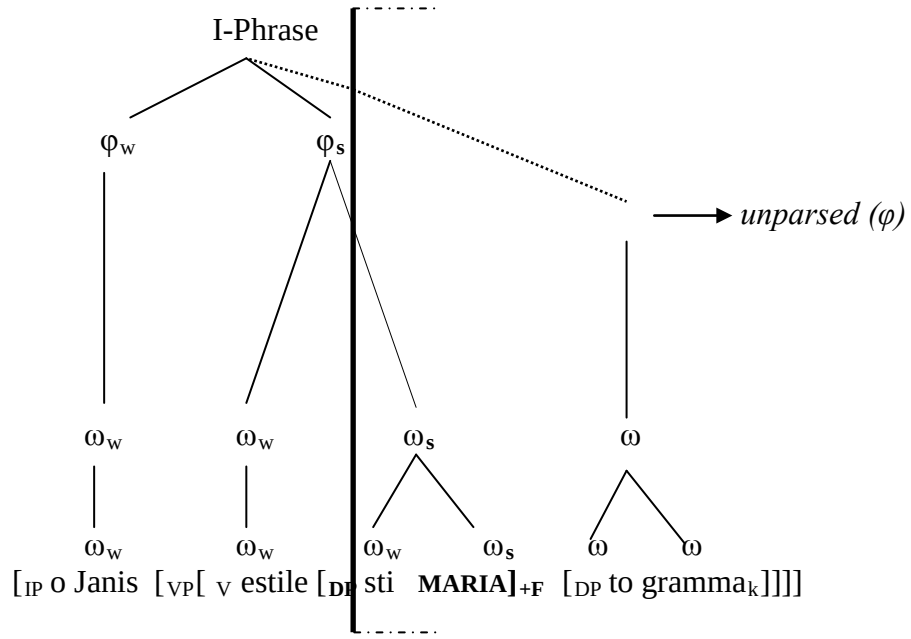
assignment to the focused constituent will not be rightmost within the clause but as far right as possible within the P-phrase that contains it.

Let us see now how we can apply the above mapping rule in (65) to the clause-internal focus that represents the misaligned mapping process. This is illustrated in the sentence in (66) which is represented by the diagram in (67) below.

(66) a. Se pion estile to gramma o Janis?
To-who-acc sent-3sg the letter-acc the John-nom?
'To whom did John sent the letter?'

b. o Janis esteile [$_{\mathbf{F}}$ sti **MARIA**] to gramma.
John-nom sent-3sg to Mary-dat the letter-acc
'John sent to Mary the letter'

(67)



The tree above illustrates the misalignment between the syntactic and the prosodic component. The structure in (67) is a non-final, narrow focus the I-Phrase. In accordance with Greek P-phrase stress in (61), sti MARIA is prosodically the strongest phonological word of the P-phrase it belongs to in virtue of being the rightmost one. Intonationally, the narrow-focused constituent is realized by an intonational boundary in the form of an L+H* nuclear pitch accent (Baltazani 2002), which signals the

beginning of a new P-phrase. The post-focal material is deaccented; this material is in turn followed by a LL% boundary, which closes off the intonational phrase. With regards to the Greek I-Phrase Rule in (62), sti MARIA will bear narrowly focused. As a result of the S-PM application the intonational boundary on the focus constituent marks its prosodic prominence and as the rightmost intonationally accented constituent it receives the strongest stress in the intonational phrase according to the Misalignment Rule in (65).

The P-phrase boundary is inserted at the left edge of sti MARIA, which carries the focus. Therefore, the S-PM mapping process decides that the left edge of the most prominent P-phrase within the I-Phrase will coincide with the left edge of the focused constituent. This in turn means that the left edge of the P-phrase that is inserted when it encounters the focused material will be aligned with the left edge of the syntactic XP that contains that material, in accordance with the mapping rules. The P-phrase boundary defines the domain of the assignment of the NSR. The focused constituent will receive nuclear stress since it constitutes intonationally the rightmost most prominent phonological word of the rightmost P-phrase of the I-Phrase. Hence, in cases where the narrow-focused constituent is internal to the I-Phrase, the nuclear stress will not be rightmost within the clause, but it will be rightmost in the P-phrase that is closed off when it 'reads off' the focus structure.

Assuming a notion of prosodic extrametricality (in the spirit of Prince & Smolensky 1993)[150] the material that follows the focused constituent counts as extrametrical; it is part of the I-Phrase containing the focused constituent but is intonationally de-accented (see also section 4.5.2). This is actually predicted as a result of the S-PM mapping process.

It is now apparent how the S-PM mapping provides a way of focusing a constituent which is not on the right-edge of the utterance: we have to align the left-edge of the p- boundary which closes off after encountering the focused material with the left edge of the syntactic phrase which contains the constituent to be focused. Given that main stress is assigned to the rightmost element in the prosodic structure, main stress will fall on the focused constituent. It does not matter for the prosodic

[150] Extrametricality is a tool for prodosic analysis. In certain languages, a particular segment of a word or prosodic unit may be ignored for the purposes of determining the stress structure of that unit. This segment would be regarded as extrametrical.

operation of stress assignment that this element is not the rightmost within the syntactic structure, as the grammar has distinct prosodic and syntactic representations.

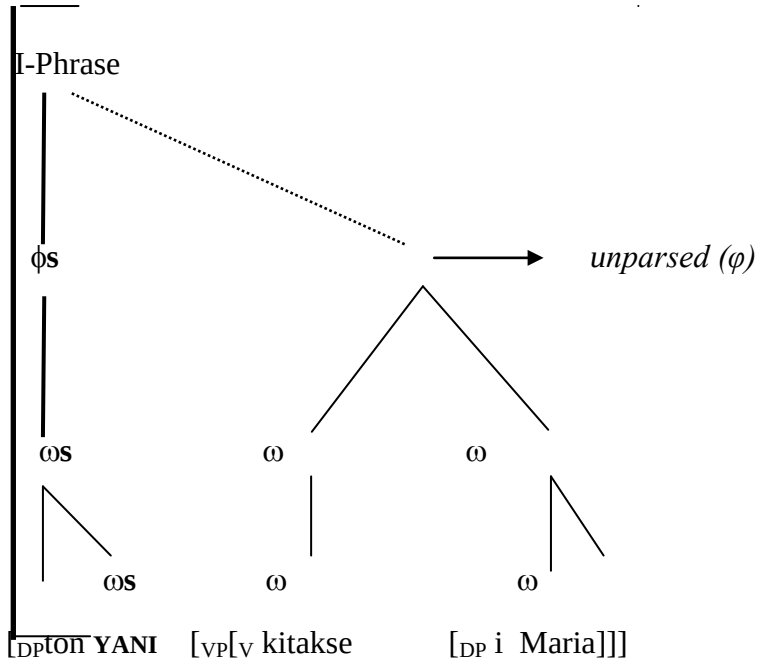
Thus, in this proposal stress assignment will always be on the rightmost constituent of the P-phrase that contains it. This follows because the post-focal material is deaccented, thus focus is always rightmost in prosodic terms.

4.5.3.3 The SPM of the Left Periphery

Having presented the analysis for right-peripheral and clause-internal focus structure, I will now look into the last set of focus constructions attested in Greek, the left-peripheral constructions. This S-PM mapping of the left periphery is very similar to the S-PM mapping of the string-medial focus. The following example in (68) contains a left-peripheral focus and the schema in (69) illustrates the S-PM for the left-peripheral focus construction in (68):

(68) Pjon kitakse i Maria?
'Who did Mary look at?'
[$_F$ ton **YANI**] kitakse i Maria
the Yani-acc looked-3sg the Maria-nom
'Maria looked at Yanis.'

(69)



Given the stress rules in (61) and (62) and the S-PM mapping in (65), I assume that a P-phrase boundary is introduced before the focused constituent (as shown by the bold line). Once a left p-boundary is inserted before the focused constituent in accordance with (64) and the focus receives main stress, then the remaining IP except from the focused constituent is rendered de-accented. As a result the focused constituent is the rightmost element of the rightmost p-phrase of the I-phrase. Hence, the S-PM mapping ensures that the focused constituent is at the right edge of its I-phrase in order to receive stress as shown in schema (69).

Since the focused constituent is a legitimate discourse entity on its own (it can be a sentence fragment), it forms its own P-phrase. Once the p-boundary is inserted, the focused constituent is parsed in an independent P-phrase realized by a rising pitch accent H* followed by a LL% boundary tone,[151] leaving the material that follows focus de-accented and potentially dephrased. For this reason, de-accented post-focal material remains unparsed; any material that follows focus cannot be parsed within a separate P-phrase. It is left unparsed because it is not governed by a headed P-phrase. However, it forms part of the same I-Phrase that contains the most prominent P-

[151] I assume here experimental findings of the Greek ToBI. The most complete description of Greek ToBI currently available in Arvaniti & Baltazani (2005).

phrase that closes off once focus in encountered. The parsing capacity of de-accented material is determined by the framework of Prosodic Phonology assumed in section 4.5.1, where it was discussed that based on the condition of Headedness (Hayes 1995) there are no headless P-phrases. By head we mean nuclar stress or nuclear pitch accent (NPA). According to Truckenbrodt (1995) discussed section 4.5.1, each lexically headed XP must contain *phrasal stress* (where phrasal stress refers to the head of the P-phrase). In the de-accented post-focal material there is no nuclear stress evident. In particular, there is no pitch accent at all since all words are de-accented. Therefore, if there is no head (no stress), it follows that the headless material cannot be parsed prosodically into a P-phrase. For this reason, de-accenting material (which is the automatic effect of the application of the NSR to the focused constituent, according to the Greek ToBI (Arvaniti & Baltazani (2005)) remains headless, and as a result left unparsed along the I-Phrase which contains the focused constituent.[152]
Based on what we have seen so far, the way the S-PM mapping of the clause-medial and left-peripheral feed into or restrict the S-IS can be summarized in the following way generalizations:

(70) **S-P MAPPING**

Generalization 3: An identical syntactic structure under different stress patterns[153] may result in ⇨ Distinct information structure partitions.

This is evident in the following examples in (71) as predicted by generalization (70) resulting from the S-PM mapping:

(71) a. **[$_F$ KINITO]** alakse i Eleni **O**VS
mobile-acc change-3sg-PS *the Eleni-nom*
'Eleni changed **mobile phone**'

b. kinito alakse [$_F$ i **ELENI**] OV**S**

[152] Given that the syntactic and phonological components are distinct and independent, though only linked by the S-PM special mapping, it is unnecessary for the left-peripheral constituent to be moved by the existence of a focus feature or for the position targeted by movement to be a designated [Spec, Focus] position. The interpretation achieved by the misaligned mapping operation is one of narrow scope but, as indicated in previous discussion, is not necessarily one of *contrast* or *exclusion of identification*.

[153] By different stress we mean the position of stress assignment, i.e. clause- final, medial, left-peripheral.

mobile-acc change-3sg-PS the Eleni-nom
'**Eleni** changed mobile phone'

The last generalization that emerges from the S-PM with respect to the way it 'feeds' into the information structure organization is the following:

(72) **S- P MAPPING:**
Generalization 4: Different syntactic structures under different stress patterns
⇨ Distinct information structure partitions

The generalization in (72) is pretty straightforward: different word orders under different stress patterns (medial or left peripheral) will result in different information structure partitions. However, the S-PM mapping also presupposes generalization 1 for the medial and the left peripheral stress-focus pattern in a way equal to what was shown for the right peripheral focus position. Again, generalization 3 points out that the fact there is a non-isomorphic relation between syntax and information structure.

From the discussion so far, it seems that what generalizations 1 and 3 show is that the output representations of the S-P mapping predict S-IS underdeterminacy in focus interpretation. It follows from that again that the relation between focus and stress is direct and that stress signals focus (discussion in Section 4.2). Generalization 2 shows that both the S-PA and the S-PM predict that, even if we change the syntax, the same stress pattern will result in different information structure. It follows that the S-PA and the S-PM directly predict generalizations 1-3 on the interaction between focus and stress.

Now let us look at the following puzzling pattern which challenges generalization 4 in (72). In (73) the syntax is different in all the three examples and the stress pattern is clause-final in (73a), clause medial in (73b) and left-peripheral in (73c). Thus, these three examples confirm generalization 4 which results in different information structures.

(73) a. i Vasso agorase [$_{F}$ **SPITI**] SV***O***
the Vasso-nom buy-3sg-PS house-acc
'**Vasso** bought a house'

b. agorase [$_F$ **SPITI**] i Vasso V***O***S
buy-3sg-PS house-acc the Vasso-nom
'**Vasso** bought a house'

c. [$_F$ **SPITI**] agorase i Vasso ***O***VS
house-acc buy-3sg-PS the Vasso-nom
'**Vasso** bought a house'

If we look closely though, although the partitionings of the sentences are different - we have a topic-comment partitioning in (73a) and a focus-background partitioning in (73c) - , the focused item is the same in all three examples, i.e. the object, and in effect all three structures are equally potential well-formed structures in answering the question '*what did Vasso buy*?'

Evidently, when the syntax is different and the stress pattern is different that the information structure is not always distinct. It seems that when this partition involves the same focused item generalization 4 cannot hold. This is exactly what is predicted under the S-IS underdeterminacy hypothesis whose validity amid word order variation remains to be empirically examined in Chapter 5. We basically need to examine whether the following hypothesis which I call the S-IS Focus Hypothesis holds true:

(74) S-IS FOCUS HYPOTHESIS

Each focus interpretation of a particular utterance included in the focus set which is implemented by a *wh*-question can be satisfied by a number of word orders, where the same focused constituent can be found in different spell-out positions with the same interpretation.

Having examined how the proposed S-P mapping operates in signalling the focused constituent of the sentence under the 'free' application of the NSR, we need to look at how the predictions of the S-P mapping deliver or 'flow' into the S-IS mapping and more importantly whether we can provide further empirical evidence that confirm the S-IS underdeterminacy hypothesis. In a nutshell, we need to investigate the following: once stress is assigned, how are the interpretations of the positions found in the different structures related to these positions? Our discussion so far (Chapters 2-4)

has led to the conclusion that the postulation of an independent level for the representation of discourse functions is inevitable. The exact articulation of this level is the, the level of information structure is main venture of Chapter 5.

On a final note, I would like to highlight the fact that the S-P mapping facilitates the assignment of main stress to the focus constituent across the board. Every focus structure (including subject, object, verb, VP, IP contexts) in Greek is in principle subject to the S-PA or the S-PM depending on the structural focus position. Nevertheless, certain structures seem to violate the proposed S-P mappingsand in effect the Focus Interpretation Principle in (1) and receive different interpretations from the ones expected. These are the V-initial orders (VSO and VOS) with focus on the final subject or object constituents. These orders provide a challenge for the stress-based account proposed in this Chapter. The interpretational properties of these structures are discussed in Chapter 5:5.7-5.71.

4.6 Concluding Remarks and Predictions

In this Chapter, I offered a stress-based analysis of encoding focus in Greek. I argued that focus in Greek is associated at the level of prosodic structure, assuming a direct mapping between the phonological representation (stress) and the pragmatic representation (focus) which is formalized in Reinhart's (1995, 2006) Focus interpretation principle in (1), repeated here in (75), and interpreted in discourse context; in particular, a mapping from prosody to discourse. Hence, the interpretation of focus in Greek takes as input representations of prosody into discourse.

(75) *Focus Interpretation Principle*

The focus of the clause is any syntactic constituent that contains the main stress of the intonational phrase corresponding to that clause.

(Reinhart 1995:62)

In this respect, I proposed that the standard Minimalist grammatical architecture has to be modified to allow for both syntactic and prosodic information to access the C-I interface (cf. Szendröi 2001; Reinhart 1995, 2006). In other words, the grammar has

to reflect the basic intuition that prosodic information has a direct influence on semantico-pragmatic information. In effect, I argued for a direct PF-LF interaction to capture the fact that a focused constituent will always carry the main stress in accordance with (75).

To account for the above claim, I proposed a model of componential mapping between syntax, prosody and discourse which accounts for the licensing of focus interpretation in Greek. This model has two mechanisms: (a) the prosody-discourse mapping which constitutes the level at which focus interpretation is encoded, and (b) the S-P mapping, the level where focus is signalled via stress, which consists of two processes: the S-PA and the S-PM.

The proposed model is conceptually advantageous since it respects the independence of different levels of representation. No movement for focus-internal reasons is permitted in the syntax in order to derive a consistent set of mapping principles from syntax to phonology/semantics (contra Costa 1996; Choi 1996; Neeleman & Reinhart 1998; Szendrői 2001; Zubizarreta 1998, Georgiafentis 2001). Instead, the mapping process proposed here straightforwardly predicts that *rightmost* prominence at the right edges is all that is needed for focus identification (Samek-Lodovici 2005). In the unmarked right-peripheral construction, the right edge of prosody meets the right edge of syntax. The identification of non-final focus constructions at the S-P interface is achieved by the S-PM mapping by means of the misalignment of focus-related mapping rules, which allow the alignment of the right edge of the focused constituent in a non-final syntactic position with the right edge of its prosodic stucture.

This proposal provides a uniform treatment of all instances of focus across the sentence (clause-initial, internal and right-peripheral) at the PF interface. Furthermore, it crucially predicts that the output representations of the S-P mapping that feed directly into the information component (part of C-I inteface) underdetermine the position of focus syntactically and interpretationally. Hence, the underdeterminacy with respect to focus interpretation is a consequence of the fact that focus interpretation runs off prosodic structure

On a final note, studies that assume the classic NSR (Chomsky & Halle 1968; Halle & Vergnaud 1987, Schmerling 1978, Gussenhoven 1982, Selkirk 1984) and those that have attempted to revise it (e.g. Cinque 1993; Zubizarreta 1998), have recognized that syntactic information plays a crucial role in the computation of main

phrasal prominence in Germanic and Romance languages. However, this does not seem to be universally true. In Germanic and Romance, the location of nuclear stress plays a role in determining the possible scope of the focus. However, in Greek, as shown so far, syntax cannot play any direct role in the computation of nuclear stress and therefore of the intonational nucleus. I argued that focus in Greek opts for the 'free' option of stress assignment via the NSR and that focus-markers are syntactically unconstrained (Schwarzschild, 1999); nuclear stress in Greek is computed in terms of phrasing and prominence, and is further constrained by the S-P mapping. This has a further theoretical consequence for Greek. If syntax cannot play a role in the computation of nuclear stress, then further support is granted for the fact that the S-IS mapping underdetermines focus interpretation; the prosodic encoding of focus in Greek predicts underdeterminacy in focus interpretation. Since syntax is not involved in grammatically encoding focus by the computation of nuclear stress but rather prosody, and more specifically the S-P mapping, then we are coming closer to the conclusion that there will be no predetermined syntactic position for focus in Greek (Chapter 2: 2.4.2). However, I leave this particular consideration open for future research.

CHAPTER 5: THE S-IS UNDERDETERMINACY HYPOTHESIS

5.1 Introductory Remarks

In Chapter 4, I proposed a stress-based analysis of encoding focus in Greek. I argued that focus in Greek is associated at the level of prosodic structure, assuming a direct mapping between the phonological representation and the pragmatic representation and interpreted off output representations of the mapping from prosody to discourse. I argued that the interpretation of focus in Greek takes as input representations of prosody into discourse (Chapter 4: 4.5).

To account for the above claim, I proposed a componential mapping between syntax, prosody and discourse which accounts for the licensing of focus interpretation in Greek. I showed that the proposed model enables us to offer a uniform account for all focus positions across the sentence by means of a special S-P mapping which consists of two processes: the processes of alignment and misalignment. The mapping rules of alignment and misalignment facilitate the encoding of focus in the prosodic structure via the application of the NSR (Chapter 4: 4.5.3). More specifically, I proposed that focus in Greek will always be aligned with the rightmost phonological word of the rightmost P-phrase of the I-Phrase that contains it, given that the material that follows is prosodically de-accented.

One of the most important implications of the S-P mapping proposed in Chapter 4 is that the application of the alignment and misalignment rules predicts underdeterminacy with respect to focus interpretation. In particular, in sections 4.5.2.1-4.5.2.3, I showed - based on Generalizations 1-4 - that the outputs of the S-P mapping feed directly into the information component and predict underdeterminacy in focus interpretation. This means that the underdeterminacy we observe on the

mapping between syntax and information structure (Chapter 1 and 2) is a consequence of the fact that focus interpretation runs off prosodic structure.

Recall from Chapter 1, section 1.2.1 that the underdeterminacy hypothesis is a descriptive hypothesis that mainly explains the way in which representations across components (syntax/prosody/information structure) are mapped: whether the mappings across components are direct (one-to-one) or indirect (one-to-many or many-to-one mappings). These mappings involve the syntax to information structure interactions, the syntax to prosody interactions and the prosody to discourse interactions.

As proposed in Chapter 4, the only mapping that is direct and unambiguous is the mapping between prosody and discourse formalized under the Focus Interpretation principle (Chapter 4: 4.2). This mapping constitutes the level in which focus interpretation is obtained in Greek, i.e. focus interpretation is determined by discourse requirements, which are satisfied by prosodic means. On the other hand the S-P mapping is indirect, i.e. one-to-many or many-to-one and it feeds directly into the information component resulting in S-IS underdeterminacy in the encoding of focus at the different structural positions across the sentence.

From a syntactic point of view, the syntactic quality of the focus position in prosodic structure is underdetermined: the element that will bear the stress is syntactically underdetermined (it can be a subject, a verb, an object); the same phonological word can be realized by a number of word order constituents, since every terminal node can be occupied by a different constituent. This is the first level of underdeterminacy. From an interpretive point of view, whether focus appears on the left, medial, or right periphery carrying the same interpretation, is not relevant as regards to the actual position for the realization of focus, to the extent that focus interpretation is concerned, since it will always coincide with the right edge of the phonological phrase within the intonational phrase that contains it as a result of the misaligned mapping. This level of underdeterminacy is related to prosody.

In this Chapter, I examine the S-IS underdeterminacy hypothesis among word order variation in Greek. In particular, I show how the output representations of the S-P mapping are mapped into constituents of the information structure. I examine how the Greek word orders are mapped into focus and ground constituents (employing aspects of theories on information packaging: Selkirk 1995, Vallduví 1992, Büring

1997, Steedman 1991, 2000) and how these mappings are confined by the application of syntactic and prosodic constraints (specific to Greek). More particularly, the interaction of syntactic and phonological constraints enable us to distinguish to what extent the mapping of word order into units of information structure validates the S-IS underdeterminacy hypothesis alongside the acceptability outcomes of the variation attested.

In line with the above, I maintain the claim that the realization of focus in Greek is the end-product of the interaction of word order, accent/stress placement, and morphosyntax (object doubling), as shown in Chapter 1: 1.2.1 and I argue that the interaction between the different components of the grammar is subject to the information structure constraints in (1):[154]

(1) INFORMATION STRUCTURE CONSTRAINTS (GREEK)

A. *Syntactic constraints:*

a. ***Word Order***: ground elements occupy peripheral position.

b. ***Clitic Doubling***: clitic-doubled objects carry ground information.

B. *Phonological constraints:*

a. ***Focus****:* Accent falls on with the focused constituent (or part of the focus)

b. ***Given***: Given or ground elements cannot carry accent

c. ***Domain***: in broad focus, accent has to fall on the rightmost constituent.

I argue that although the distribution of focus via stress is free (Chapter 4) and interpretational effects of focus are not restricted to specific positions (Chapter 3), certain syntactic effects (e.g. adjacency) as well interpretive effects constrain the S-IS underdeterminacy hypothesis. Similarly the distribution of given material also constraints the S-IS underdeterminacy hypothesis. Nevertheless, it will be shown that among the constraints in (1), the phonological ones have the strongest effects on the

[154] The proposal developed in this chapter borrows the above constraints from the experimental findings from Alexopoulou and Keller's (2001) analyses of the interaction between word order and IS. The constraints proposed above are modified from these authors' initial proposal for the purposes of the current analysis.

acceptability of word orders in certain contexts, followed by morphosyntactic constraints and word order constraints. It follows that the examination of the S-IS underdeterminacy hypothesis amid word order variation makes some important predictions. It predicts that word order in Greek is not the most crucial factor for the realization of information structure. The interaction between structural resources and phonological resources in realizing information structure ranks prosody a much more decisive factor in the realization of focus.

An important implication results from the above prediction: if the S-IS mapping is indeed inconsistent and underdetermines focus interpretation in an indirect fashion, and as a result word order in Greek is not directly regulated by information structure, then the question that arises is what regulates word order in Greek? I argue that it might well be the case that word order in Greek is not regulated by traditional accounts of information packaging, i.e. subject to a pragmatic partitioning, but it is rather regulated by more abstract or conceptual strategies under which syntactic constituents map into logico-semantic structures: predicative vs. non-predicative mappings (Cécseg & Kiefer 2009, Kechagias 2011).

The analysis sketched out in this Chapter will not pursue an OT account although it seems that is working towards this direction. A reason for that is mainly the fact that although the constraints in (1) apply across the board, it seems that ranking of constraints might not be the right analysis for Greek. The examination of information structure possibilities of the different word orders shows that it is not just a matter of constraint ranking, or number of constraints, to acceptability but rather the fact that different contextualized readings prefer different constraints. So it may not be a question of ranking at all. This means that in different contexts certain constraints may be more prominent than others, as we will see in section 5.5. However, this is not a fully developed view, it requires further research, and probably an OT analysis might well be the next step.

The remaining Chapter is structured as follows: Section 2 discusses two theories of information structure: first, Selkirk's (1984, 1985) theory, which identifies the position of focus on the basis of the distribution of pitch accents and proposes a dichotomy between focused and given elements based on syntactic algorithms that regulate the focus feature projection. Second, Vallduví's (1992) information packaging, which assumes an independent level of information structure and

partitions the sentence into focus and ground; the ground is partitioned further into link and tail.

Section 3, assuming notions of information packaging, examines the distribution of focus and ground material in Greek and shows how the mapping between syntactic categories and information structure constituents is achieved. First, I examine focus marking in Greek word orders under different contexts (subject focus, object focus, verb focus and all-focus context) and provide assumptions on the way it is constrained.

Section 4 formalizes the interactions presented in section 3 in terms of information structure constraints such as the ones proposed in (1). I also examine the marking of ground material and show how syntactic constituents are mapped into links and tails (in Vallduví's terms). I ultimately argue that the S-IS mapping is not one-to-one. In addition, I also examine the notion of contrastive topic (Büring's 1997, 2003), which sheds light into the analysis of both focus and ground material. The distributional and contextual effects of contrastive topics show that although topics are interpreted as given information and can occur in any position -preverbal or post-verbal- only their placement in the preverbal position can maintain their function as links; their placement in the post-verbal position results in ungrammaticalities. I also present evidence from CLLD in support of the constraint that preverbal objects must be doubled. The function of CLLD-ed NPs as links provides evidence for further constraining the S-IS underdeterminacy hypothesis (Hendriks & Dekker 1996, Alexopoulou & Kolliakou 2002).

Section 5 re-examines the S-IS underdeterminacy hypothesis with respect to the word order variation in Greek against the constraints in (1). The purpose of this task is to assess the relevant prominence of the structural resources – phonological and/or syntactic – which constrain information structure, and ultimately argue for the superiority of the prosodic component. I also show that the S-IS underdeterminacy hypothesis gains support from all-focus contexts and argue that all-focus contexts with Topicalized objects present interpretational effects, such as specificity vs. non-specificity that satisfy discourse requirements, such as the appropriateness of these structures in event/news-reporting. Section 6 re-examines the notion of focus ambiguity and argues that focus ambiguity is a discourse requirement facilitated by prosody.

Section 7 offers a tentative proposal arguing that word order in Greek is not regulated by traditional accounts of information packaging, but it is rather regulated by conceptual or logico-semantic strategies which map syntactic constituents into logico-semantic structures: predicative vs. non-predicative mappings (Cécseg & Kiefer 2009, Kechagias 2011).

5.2 Information Structure Theories

This section examines two models of information structure using different formalisms. The first model is Selkirk's (1986, 1995) information structure theory which assumes that focus is derived from stress (pitch accents) but allows for a hierarchical prosodic structure which is autonomous and distinct from syntactic structure. This theory differs from Vallduví (1992) and Vallduví and Engdahl (1996), who view information structure as a level separated from syntax and prosody, although focus assignment -the F feature- is part of the syntactic process. Engdahl and Vallduví (1996) claim that no correspondence occurs between syntactic units and information structure units cross-linguistically.[155] Finally, Büring's (1997, 2003) account offers very insightful, clear-cut information structure distinctions on the division of new and given in his formulation of the contrastive topic. Büring's (1997, 2003) information theory will be discussed in Section 4.

5.2.1 Identifying New vs. Given distinctions

Recall that in Jackendoff (1972) and Chomsky (1976) focus is marked by stress (cf. Chapter 2:2.1). Stress rules operate on sentences in which the focused constituent(s) are marked. Selkirk (1995) introduces the opposite outlook, namely, she does not derive stress from focus but rather focus assignment is derived by the distribution of

[155] There is another very important work in the literature of IS: Steedman's (1991, 2000) main insight is that Information structure, intonation and syntax are structurally congruent which allows for the semantic view of prosody described in Chapter 4 and provides the formalization for a more flexible notion of syntactic constituency than that licensed by more traditional grammatical formalisms. According to Steedman (1991, 2000), syntactic structures might be orthogonal to intonational structures; however, Combinatory Categorial Grammar (CCG) takes non-syntactic constituents to correspond to intonational structure constituents, and as a result IS units always correspond to syntactic units.

pitch accents.[156] Thus, the focused constituents that will carry the accent needs to be determined. In Selkirk's proposal, information which is not given must be F-marked by the Basic Focus Rule.

(2) *Basic Focus Rule* (Selkirk, 1995, p.555)
An accented word is F-marked

According to (2), a pitch accent H* aligned with the stressed syllable is the phonetic realization of focus in Selkirk's model. The word carrying the pitch accent is the 'focus exponent'. Hence, F-marking, the process of identifying the new information in an utterance is the primary process and it satisfies information structure and syntactic principles. Consider the following example in (3):

(3) Mary bought a book about BATS.

a. Mary bought a book about [$_{\mathbf{F}}$ **BATS**]
b. Mary bought a book [$_{\mathbf{F}}$ about **BATS**].
c. Mary bought [$_{\mathbf{F}}$ a book about **BATS**]
d. Mary [$_{\mathbf{F}}$ bought a book about **BATS**].
e. [$_{\mathbf{F}}$ Mary bought a book about **BATS**].

This sentence in (3) can be an appropriate answer to many wh-questions with the same location of pitch accent. However, (4) can only be the answer to '*Who bought a book about bats?*'

(4) [$_{\mathbf{F}}$ **MARY**] bought a book about bats.

Selkirk assumes that focus is bigger than the pitch accent carrying syllable. The [+F] feature complies with rules that allow to 'project' up to the entire sentence. The rules that regulate the feature projection are shown in (5):

[156] There are other proponents of this approach, e.g. Gussenhoven 1984; Rochemont 1986. This analysis has been the base for more recent accounts, Cinque 1993; Reinhart 1995; 1997, Neeleman and Reinhart 1998, among others. Cinque's account is different in the sense that he provides a phrase-based stress theory rather than an argument –predicate based stress theory.

(5) *Focus Projection* (Selkirk, 1995, p.555)

a. F-marking of the head of a phrase licenses the F-marking of the phrase.

b. F-marking of an internal argument of a head licenses the F-marking of the head.

c. F-marking of the antecedent of a trace left by NP- or *wh*-movement licenses the F-marking of the trace.

d. If a head is F, then an adjunct to the head may be F.

(Rochemont, 1998, p.341)

The syntactic feature [F] not only marks the focus but it also constrains the interpretation of the F-marked constituents. This follows from (6):

(6) *Interpretive Constraints* (Selkirk, 1995)

a. The focus of the sentence (FOC) is defined as an F-marked constituent not dominated by any other F-marked constituent. (p. 555)

b. F-marked constituents which are not a Focus are interpreted as new in the discourse. (p.556)

c. A constituent without F-marking is interpreted as *given.* (p.556)

The process of focus projection marks the highest syntactic node that is assigned the [F] feature as the FOC of the sentence as in (7):

(7) [She was [told [to entertain [the child [with [the blue *HAT*]$_{F}$] $_{F}$] $_{F}$] $_{F}$] $_{F}$]$_{FoC}$

Hence, the Basic Focus Rule in (2) allows for the direct one-to-one relation between focus and prosodic prominence (in the same sense argued in Chapter 4 under the Focus Interpretation Principle). However, the recursive nature of the algorithm in (5b) allows for constituents larger than the one carrying the prominence to be focused. Obviously each of the [F] labelled constituents in (7) can count as the FOC of the sentence, where prominence is on *hat*, the focus exponent. If focus percolates up to the whole sentence then this is expected to be the answer to a question such as 'What happened to her?' However, the FOC of the utterance can be any smaller constituent as long as it obeys the restrictions imposed by argument structure. Thus, the utterance can be an answer to any question '*What was she told to do*?' or 'Who was she told to

entertain?' and so on with a different FOC domain each time. If, however, the subject is accented, focus projection to other elements of the sentence is blocked because the subject is an external argument and neither (5a) nor (5b) license projection from external arguments. Example (8) is not an appropriate answer to an all-focus question such as *What happened?*

(8) [Mary was [told [to entertain [the child [with [the blue **HAT**]$_F$] $_F$] $_F$] $_F$] $_F$] $_{FOC}$

An example such as (9), though, is a possible answer to '*What's been happening?'*

(9) The [$_F$ **SUN**] came out

Selkirk argues that the subjects of unaccusatives are derived by movement from the object position, leaving a trace there. According to (5c), this trace can be F-marked since its antecedent is F-marked. Since the object trace is F-marked, then it follows from the (5b) that the VP will also be F-marked.[157] There are a number of phenomena that Selkirk (1984, 1995) accounts for relevant to the interaction between accent placement and the given-new distinction.[158] Hence, with respect to the mapping between prosodic prominence and information structure we can summarize Selkirk's account as follows:

Syntactic nodes that are not the FOCus have to be interpreted as Given: the definition of the FOC of the utterance as the 'F-marked constituent not dominated by any other F-marked constituents' results in an IS division between plain F-marked constituents and FOC, which yields the division in (10) below:

[157] This area is problematic especially if one thinks the application of the Basic Focus Rule in (2). If the sentence is an all-focus we need both constituents to be stressed. Erteshik-Shir (2007) proposes an account which shows that this intonation pattern is determined contextually and does not depend on a syntactic movement analysis.

[158] The theory also provides an explanation for how non-arguments do not project focus; compare:

(i) a. He smoked FOC[in the TENT]FOC.

b. He only FOC[looked at the GARden]FOC. *generic* VS *event*

This also helps to account for the contrast between:

(ii) a. I heard a CLOCK tick. b. I forced the CLOCK to tick.

(iii) a. TRESpassers will be prosecuted. b. TRESpassers will be PROsecuted.

when interpreted as the status of generic-like statement, accented VP is required to get sentence focus.

(10) *F Interpretation:*

a. F-marked constituents but not FOC: *New* in the discourse

b. Constituents without F-marking: *Given* in the discourse

c. FOC: either Given or New in the discourse

(10c) is the result of the process of integration (Jacobs 1992, 1999) under which the head of a phrase can remain unaccented if its complement is accented, as in (11), where both the verb and its object are F-marked but only the object *CAR* is accented:

(11) What did Mark do?

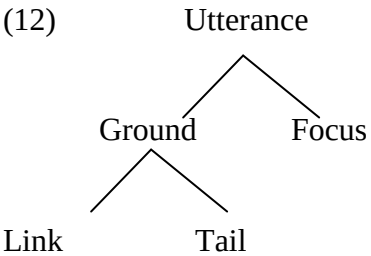
He $[[\text{sold}]_F$ [a **CAR**$]_F]_{FOC}$

In the following section, I present an information structure approach which departs from Selkirk's model, in that it provides a finer distinction of information structural categories and diverges from Selkirk (1995) in that it assumes the independence of information structure, as a distinct level of representation.

5.2.2 Information Packaging

According to Vallduví (1992), (following Chafe 1976, 1994, and Prince 1986), a sentence conveys information that updates the hearer's knowledge-base or information state. Each sentence is an instruction demonstrating to the hearer *what* information to add, *where* to add it, and *how*[159]. These instructions are encoded in the information structure of a sentence in the way shown in (12):

(12)



[159] Information states are represented as systems of Heim-style file-cards (Heim 1983). A file-card contains a number of records (conditions) listing attributes that pertain to the entity it denotes, or relations that hold between that entity and other entities denoted by other file-cards.

In Vallduvi's (1992) model *focus* indicates that part of the sentence that relationally expresses the new information of the sentence relative to a given context. On the other hand, *ground* acts as an anchor for focus; it attaches the new information to the hearer's current information state. Ground is further divided into *link* and *tail*. The link points to the 'locus' of update in the hearer's information state, i.e., it points where the new information should be added. Tail specifies how information should be added. The three primitives focus, link, and tail combine and result in four instruction types in a language such as English for example:

a. *all focus*
b. *link-focus*
c. *focus-tail*
d. *link-focus-tail*

Let us see how these combinations –instruction types - function with Vallduví's well known examples from English in (13), where focus is indicated using square brackets and subscript F.

(13) a. **All Focus**
The president has a weakness.
[$_{\mathbf{F}}$ He hates **CHOCOLATE**].

b. **Link-Focus**
Tell me about the people in the White House. Anything I should know?
The *president* [$_{\mathbf{F}}$ hates **CHOCOLATE**].

c. **Focus-Tail**
You shouldn't have brought chocolates for the president.
[$_{\mathbf{F}}$ He **HATES**] chocolate.

d. **Link-Focus-Tail**
And what about the president? How does HE feel about chocolate?
The president [$_{\mathbf{F}}$ **HATES**] chocolate.

(Examples from Vallduvı & Engdahl, 1996)

Sentence (13a) involves an all-focus instruction which updates the information about *the president*. Note that *the president* is already a locus of update by the context in which (13a) appears. Therefore, (13a) does not contain a link. In a similar way, in (13c), the existence of the previous context also offers a locus of update, which is also an instruction without a link. On the contrary, example (13b) designates *the president* as the link, i.e., the locus of update. (13b) instructs the hearer to add the new condition *hates chocolate* to this locus. Finally, example (13d) also designates *the president* as the locus of update; however, it communicates a different update instruction, a different tail. (13d) initiates the hearer to look for a condition of the form *likes chocolate* and substitute the predicate *likes* with *hates.* It is obvious that English encodes focus, link and tail prosodically.

In Catalan, these information structure categories are encoded syntactically, via word order. In Catalan, links are clitic left dislocated (CLLD) elements as in (14) and tails are clitic right dislocated (CLRD) as in (15) and only the focus stays in the clause. We will see that Greek shares almost the same encoding of information structure categories with Catalan. However, it seems that Catalan needs a finer division of information structure categories, given the fact that only elements that are not topics of the previous sentences can be topicalized, e.g. 'new topics'. Therefore, the ground-split into link and tail correctly describes the S-IS mapping of the language.

(14) Clitic Left Dislocation
[Les taules,]$_{\text{LINK}}$ *les* vaig portar al pis.
The tables cl-acc PS.1sg bring to-the flat
'The tables, I brought to the flat

(15) Clitic Right Dislocation
Les vaig portar al pis, [les taules]$_{\text{TAIL}}$
cl.acc PS.1sg bring to-the flat, the tables
'I brought to the flat, the tables

In Vallduví's system, English Focus is marked by intonational prominence, realized by a H*, Links are marked by L+H* pitch accents and Tails are typically deaccented.

5.2.3 Focus interpretation and Syntactic Constituency

Notice that the rules of focus projection encoded in Selkirk's algorithm in (5) provide focus domains that correspond only to syntactic constituents. That is, there is no focus domain that corresponds to a syntactic string which is not a syntactic constituent. For example, in a transitive sentence, the string corresponding to the subject and the verb can never be a focus domain. Let us now return to the example (13) by Vallduví and Engdahl (1996b, p. 470), repeated here in (16) for convenience.[160]

(16) a. You shouldn't have brought chocolates to the White House.

b. [$_{\mathbf{F}}$ The president **HATES**] chocolate.

According to Vallduví and Engdahl (1996), the focus domain in (16b) consists of the subject and the verb (as shown by the subscript "F"). Since this string is not a syntactic constituent, we can assume that in their analysis focus is not always a syntactic constituent.[161] The crucial distinction between these two types of analyses lies in the use of Focus markers (henceforth F-markers) or the F-feature.

In Vallduví and Engdahl's system the F-feature is only used for the purpose of marking the focus, the FOC in Selkirk's analysis. Recall that in a theory employing the syntactic Focus Projection algorithm, there are two types of F-markers: embedded and non-embedded. The non-embedded F-markers correspond to foci (FOC), whereas the embedded F-markers keep track of the informational status of a constituent's denotation. Only constituents denoting new information are F-marked, while constituents denoting given information are not F-marked. If we integrate the above structure in (16) into an analysis like the one proposed by Selkirk, we have to claim that the whole sentence is in focus because that is the only domain that includes both the verb and the subject into the focus domain. This focus structure is represented in (17):

[160] For similar comments cf. Vallduví and Engdahl (1996b); Lambrecht (1994); Zubizarreta (1998).

[161] In his analysis of Catalan, Vallduví assumes that non-focused constituents move out of the core clause, and hence in Catalan, the focus is always associated with a syntactic constituent, the minimal IP. This analysis is plausible for Catalan, given its syntax. However, we could not assume the same mechanism to be operative in English, and hence in English, the focus/background partition would have to be done along non-constituent lines.

(17) [$_{F}$ The president [$_{F}$ [$_{F}$ **HATES**] chocolate.]]

In (17) the syntactic focus projection algorithm analysis assumes that the NP *chocolate* is also part of the focused constituent in contrast to the analysis of Vallduví and Engdahl. Although this might be considered as a problem, the reason it can be done is because the NP *chocolate* can be left without F-marking even if it is within the focus domain, so it is part of the FOC. The absence of F-marking entails that it is interpreted as given in the context. In the above context, this is possible by virtue of *chocolate* being mentioned in the previous utterance. The reason the NP *chocolate* must be included into the focus domain is that there is no other way to include the subject and the verb into the focus domain under the syntactic focus projection algorithms, when the verb carries the main prosodic prominence within the sentence. A question that emerges is how can a constituent be given but also count as part of the domain of focus? Actually, it is quite possible to have focused phrases that contain given material. Consider the following example from Schwarzschild (1999) which contains given material: the part *she praised* is part of the focus, although the F-marking on *him* entails the presence of a pitch accent.

(18) {Who did John's mother praise?}
A: [$_{F}$ she praised [$_{F}$ **HIM**]]

However, the above examined utterance is also compatible with two more focus structures, shown in (19):

(19) a. The president [$_{F}$ [$_{F}$ **HATES**] chocolate]
b. The president [$_{F}$ **HATES**] chocolate.

Given the context of this utterance and under the theory of information structure assumed here, this utterance, I would argue, has the focus structure indicated in (19b). That is, the verb constitutes the sole focus domain. The denotation of the direct object NP is given by the prior utterance and the denotation of the subject NP is also entailed by the same assertion. It is invoked by the mention of the NP "White House". Thus, the utterance we are discussing is actually congruent to the question "How does the president feel about chocolate'?"

The issue to reflect upon here is that the syntactic focus projection algorithm predicts that the NP given constituent is interpreted as part of the focus in (19a) and outside the focus domain in (19b), that is, we have two different information structure structures of the same syntactic structure. Note that in both information structures the NP should be interpreted as given in discourse. This is a consequence of the postulation of the focus-assignment rules, which are too constrained to account for (19). Vallduví's proposal does not face these problems, since information structure categories do not have to map onto syntactic constituents but can also map to non-syntactic constituents. In subsequent sections, similar evidence is provided by Greek.

Looking back to our discussion in Chapter 2, the following question becomes relevant. If focus is not amenable to syntactic constituency, what are the consequences with regard to focus interpretation? In other words, how is focus interpreted? Despite the fact that Selkirk does not discuss the problem of focus interpretation, the standard assumption in theories that adopt the syntactic focus projection analysis is that focus is interpreted in LF. However, if syntactic structure is the input to LF, and non-syntactic F-marked constituent are sent to LF for interpretation, how can LF 'see' them, when they violate rules of syntactic constituency? This is why the postulation of an independent level of information structure becomes inevitable, since information structure does not 'see' well-formed syntactic constituents for the purpose of interpretation, but rather information structure units; Vallduví's model is advantageous in this respect (similar to Neeleman & van de Koot 2008).

Having presented Selkirk's model of F-marking and Vallduví's model of infomation packaging - which will form the basis of many assumptions to follow-, in what follows, I discuss the linguistic realization of information packaging in Greek; this realization employs different means: accent, word order and object doubling. I start by looking at the realization of new information, i.e. focus marking.

5.3 Focusing Contexts and Information structure

In this section, I examine the focus marking in Greek word orders in specific contexts and the way it is achieved by showing conditions which constraint certain contexts. More specifically, I present the interaction between intonation, word order and morphosyntax (object doubling) in the realization of information structure, looking at

four focus contexts: subject focus, object focus, verb focus and all-focus context. I show how these interactions are determined by context in both canonical and scrambled constituent orderings.[162] These interactions are formalized under a set of information structure constraints.

Two prosodic patterns will be the focus of this examination: the neutral prosodic pattern, which characterizes broad focus contexts in declarative sentences, where the word that carries the nuclear pitch accent is the final in the sentence; in other words, the prosodic pattern where the nuclear pitch accent falls on the rightmost edge of the prosodic structure (the rightmost phonological word of the rightmost P-phrase of the I-Phrase), which also happens to be rightmost in syntactic structure followed by a combination of phrase accent and boundary tone (cf. Chapter 4: 4.5).[163] According to the GRToBI Arvaniti & Baltazani (2005) and Baltazani (2003) the typical melody tune of a Greek declarative in an "all-new" context, broad focus, is H*, followed by a L-L% boundary tone. This is, for example, the phonological representation of a typical SVO sentence structure.

The second prosodic pattern is the non-neutral one and by this we mean non-final accent placement realized as narrow focus. However, narrow or contrastive interpretation can also be associated with the final constituent. The typical melody tune of narrow focus is realized by an L+H* nuclear accent which signals narrow or contrastive focus (Arvaniti et al. 2006b).

In order to examine the interaction between information structure and syntactic position, we will consider all the logically possible constituent orderings of this sentence type. Several points will be of interest here. First, a default or canonical order of the nominal arguments seems to be a strict requirement for achieving a broad sentence focus and focus projection or ambiguity. Second, the verb can occupy the initial or the medial-string position; however, the final position is not the most preferred. First, I look at the word ordering realized under neutral accent placement in

[162] The syntactic derivation of the various word orders is not of interest here (Cf. Chapter 1, Section 2). The main issue is how the already derived orders are mapped onto information structure units and what allows for a successful mapping and what prohibits this mapping. Since theoretically there is no focus driven syntactic movement but rather the mapping takes place in the information structure component, the distinction between canonical and scrambled orders is only relevant in distinguishing between *in-situ* and dislocated material.

[163] The rightmost edge of the prosodic structure can usually coincide with the rightmost edge of the syntactic structure in certain approaches, e.g. Selkirk's (1995) end-based mapping. In this thesis, the claim presented in Chapter 4 is that no matter what the position of the focused constituent is in NS, this position will always be considered rightmost in prosodic structure, since the material the follows the focuses constituent are prosodically extrametrical.

all-focus contexts and then I will consider cases of non-neutral prosodic patterns or narrow focus.

5.3.1 Focusing the Sentence

In Greek, for a sentence to be compatible or felicitous in an all-new focus context, a canonical ordering of the nominal arguments is needed, where the verb is either allowed to precede the subject (VSO) or immediately follow it (SVO). In these ordering prosodic prominence is related with the object in the most embedded syntactic position. Stress on the final constituent can be compatible with an all focus context (cf. Chapters 3 and 4, in accordance with Reinhart's Focus Set), since broad focus requires rightmost stress. Other ordering possibilities, such as verb-final orders (OSV/SOV), cannot produce an "all-new" broad focus sentence as shown in (20a-b).

(20) **All-Focus**

Kanena neo?
Any news?

a. [$_{F}$ i kivernisi tha afksisi ti **FOROLOGIA**] SV**O**
the government-nom will-fut raise-3sg the taxes-acc
'The government will raise the taxes'

b. [$_{F}$ tha afksisi i kivernisi ti **FOROLOGIA**] VS**O**
will-fut raise-3sg the government-nom the taxes-acc
'The government will raise the taxes'

The verb final orders are not acceptable in an all-focus context (20c-d).

c. *[$_{F}$ i kivernisi ti forologia **THA AFKSISI**] *SO**V**
the government-nom the taxes-acc will-fut raise-3sg
'The government will raise the taxes'

d. *[$_{F}$ ti forologia i kivernisi **THA AFKSISI**] *OS**V**
the taxes-acc the government-nom will-fut raise-3sg
'The government will raise the taxes'

Also, VO**S** and OV**S** are normally not felicitous in 'all-focus' contexts in (20e-f):[164]

e. ? [$_{\mathbf{F}}$ tha afksisi ti forologia i **KIVERNISI**] ***VOS**
will-fut raise-3sg the taxes-acc the government-nom
'The government will raise the taxes'

f. *[$_{\mathbf{F}}$ ti forologia tha afksisi i **KIVERNISI**] *OV**S**
the taxes-acc will-fut raise-3sg the government-nom
'The government will raise the taxes'

It seems as if only two words orders in (20a-b) are fully acceptable out of the six possible orderings under a neutral prosodic pattern allowing the utterance to be the answer in an 'out of the blue' context question. VSO is considered the most natural response to an all-focus question.[165] As shown in Chapter 4, in such contexts the accent falls on the rightmost constituent. In this respect, Greek patterns with English; mainly in both languages an all-focus interpretation can be yielded by accent on the most embedded constituent.

Due to focus ambiguity the sentence in (20a) with an SVO word order can function as an answer to other questions in addition to fulfilling the requirement for sentence broad focus (under the S-P mapping proposed in Chapter 4). This is an additional property of the SVO word order. Thus, example (21) can induce VP or O-focus. (21a) and (21b) are congruent with a question that can elicit S-(Sentence)-focus (21c), VP-focus (21d) and naturally O-focus. Like its English counterpart, SVO in Greek is three-way ambiguous.[166]

(21) **ALL-FOCUS**

a. Kanena neo?
Any news?

[164] Based on previous literature (Alexopoulou & Keller 2001, Tsimpli 1995, Georgiafentis 2005, among others) these two orders are generally not compatible with an all-focus reading. However, as it will be shown in subsequent sections these orders can also be compatible with wide focus contexts.
[165] It is precisely this naturalness of VSO in such contexts that has led to its being considered as the basic word order of Greek (Agouraki 1993, Alexoupoulou 1999, Philippaki – Warbuton 1985, Tsimpli 1995 as shown in Chapter 1).
[166] However one could assume under the S-IS underdeterminacy hypothesis that it is five-way ambiguous, considering the other focusing possibilities: subject focus and verb focus.

b. Ti tha kani i kivervisi?
What will do-3sg the government-nom
What will the government do?

c. i kivernisi [$_{\mathbf{F}}$ tha afksisi ti **FOROLOGIA**] S**VO**
the *government-nom will-fut raise-3sg the taxes-acc*
'The government will raise the taxes'

d. [$_{\mathbf{F}}$ tha afksisi ti **FOROLOGIA**] V**O**
will-fut raise-3sg the taxes-acc
'The government will raise the taxes'

Interestingly, Vallduví & Engdahl (1996) note that questions introducing an all-focus context can also give rise to VP focus, with the subject and the object dislocated to the left periphery of the sentence. Thus, apart from SV**O** order with focus on the object and the subject in a topicalised (link) position, the order O(cl)VS with the optional presence of a clitic can also instantiate a link/topic-focus instruction. In effect, the information structure of (22) is a felicitous answer to an all-focus context question as shown in (22a-b).

(22) Kanena neo?
Any news?

a. [i kivernisi]$_{\mathbf{LINK}}$ tha afksisi [$_{\mathbf{F}}$ ti **FOROLOGIA**] SV**O**
the government-nom will-fut raise-3sg the taxes-acc
'The government will raise the taxes'

b. [ti forologia]$_{\mathbf{LINK}}$ [tha (tin) afksisi i kivernisi]$_{\mathbf{TAIL}}$ [$_{\mathbf{F}}$ **AVRIO**] O(cl)VS**Adv**
the taxes-acc fut-will it-cl raise-3sg the government tomorrow
'The government will raise the taxes tomorrow'

Hence, an all-focus construction can have the form of link-focus (22a) or a link-tail-focus instruction (22b); in order to answer an all-focus context such as the one imposed in (22) not everything has to be in focus, as in the examples (21a-b). Broad and narrow focus contexts differ significantly in the range of utterances they can accommodate. The distinction between broad and narrow focus structures is indicated by the range of the available interpretational domains. Broad focus contexts allow the accommodation of a wider choice of ground-focus structures, while narrow focus

contexts are limited to the ground-focus partitions directly imposed by the context questions. An example like (23b) can also be an answer to an all-focus question like (23a), even if its prosodic pattern does not match up with the neutral prosodic pattern of an all-focus answer/instruction; the main accent falls on the verb rather than the rightmost constituent and the object is doubled. The context probably requires prior shared knowledge between the interlocutors that the government would raise/was expected to raise the taxes, given the double object is given. However, even if such knowledge is shared by the speakers, such a sentence would not be acceptable as an answer to an object focus question such as *what did the government raise?*; the other instruction that this utterance is felicitous is a verb-focus instruction that reveals surprise or contrast.

(23) a. Kanena neo?
Any news?
b. [$_{\mathbf{F}}$ tin **AFKSISE**] [ti forologia]$_{\mathbf{LINK}}$ [i kivernisi]$_{\mathbf{TAIL}}$ cl**V**OS
it-cl raised-3sg/PS the taxes-acc the government-nom
'The government raised the taxes'

It is worth mentioning here that the wider range of answers satisfying an all focus question yields higher freedom in the linguistic realization of these answers. Thus, most orders (SVO, OVS, and V-initial orders) are acceptable as answers to all-focus questions, while the stress may not always appear in the rightmost clausal position to the left, that is, even when they do not represent an all-focus reading.

5.3.2 Focusing the Subject

Let us now consider cases of narrow focus starting with the context of subject focus.

In example (24) the subject NP *i kivernisi* is focused. Focused NPs carry the accent in Greek, as in English, but unlike English their order is not fixed; they may appear either preverbally as in (24a) or postverbally as in (24b). Both of these orders are perfectly acceptable answers to the question that licenses narrow focus on the subject as shown in (24). According to the wide view in the literature in Greek presented in Chapter 3, preverbal focus is more likely to be associated with a

contrastive reading (Alexopoulou 1999, Baltazani 2002, Tsimpli 1995, Georgiafentis 2005). However, as the examples in (24) indicate, both answers are felicitous under an information focus reading. There is no contrastive interpretation here in the preverbal order.

(24) **SUBJECT FOCUS**

Pjos afksise ti forologia?

Who raised the taxes?

a. [ti forologia]$_{\textbf{LINK}}$ [tin afksise]$_{\textbf{TAIL}}$ [$_{\textbf{F}}$ i **KIVERNISI**] OclV**S**

the taxes-acc cl- raise-3sg/PS the government-nom

b. [$_{\textbf{F}}$ i **KIVERNISI**] [(tin) afksise ti forologia]$_{\textbf{TAIL}}$ **S**VO

the government-nom it-cl raised-3sg/PS the taxes-acc

'The government will raise the taxes'.

Ground NPs (*ti forologia*) are also free to appear either preverbally or post-verbally as shown in (24). According to Alexopoulou 1999, Alexopoulou & Keller 2001, Alexopoulou & Kolliakou 2002, Baltazani 2002, preverbal ground NPs realize links in Vallduví's Information packaging model (i.e. they are topics in the traditional sense), while postverbal ground NPs are interpreted as tails. Preverbal ground NPs in Greek are obligatorily doubled (unless bare indefinites), whereas postverbal ground NPs are optionally doubled[167] (Tsiplakou 1998, Alexopoulou 1999). Example (24a) realizes a *link-focus* instruction in Vallduví's terms, whereas example (24b) realizes a *focus-tail* instruction. Hence, both ground and focused NPs can surface either in the postverbal or the preverbal position. Ground NPs in Greek are preferred in peripheral positions while focused ones are preferred adjacent to the verb (Alexopoulou 1999, Baltazani 2002, Tsimpli 1995).

Regarding the position of the focused constituent, in the main literature on Greek, there is a requirement of adjacency with the verb which is usually rigid; lack of adjacency results in ungrammaticality (at least preverbally) as shown in (25a) below. However, there are cases where no adjacency is required. Most frequently, lack of adjacency induces contrastive focus readings, or to put it differently adjacency in not required in contrastive focus. Thus, the clV**S**O order where the focused NP is

[167] This constraint will be tested in Section 5.4.1.2.

adjacent to the verb is a felicitous answer to the subject question in (25b), whereas the clVO**S**, in (25a), in which the focused NP is not adjacent to the verb, is not acceptable. In section 5.7, I will provide a different explanation for the unacceptability of this order. I will show that the infelicity of clVO**S** is not due to the lack of adjacency but to independent interface requirements, which are different from discourse requirements that require adjecency.

(25) **SUBJECT FOCUS**

Pjos afksise ti forologia?

Who raised the taxes?

a. ? [Tin- afksise]$_{\textbf{LINK}}$ [ti forologia]$_{\textbf{TAIL}}$ [$_{\textbf{F}}$ i **KIVERNISI**] clVO**S**

it-cl- raise-3sg/PS the taxes-acc the government-nom

'The government raised the taxes'

b. [Tin afksise]$_{\textbf{LINK}}$ [$_{\textbf{F}}$ i **KIVERNISI**] [ti forologia]$_{\textbf{TAIL}}$ clV**S**O

it-cl raise-3sg/PS the government-nom the taxes-acc

'The government raised the taxes'

Preverbal ground NPs normally precede preverbal focus (26a). Tsimpli (1995) and Tsiplakou (1998) consider examples such as (26), where the link follows the focused NP as ungrammatical[168].

(26) a. [ti forologia]$_{\textbf{LINK}}$ [$_{\textbf{F}}$ i **KIVERNISI**] [tin afksise]$_{\textbf{TAIL}}$ O**S**clV

the taxes-acc the government-nom it-cl raise-3sg/PS

'The government raised the taxes'

b. *[$_{\textbf{F}}$ i **KIVERNISI**] [ti forologia]$_{\textbf{LINK}}$ [tin afksise]$_{\textbf{TAIL}}$ **S**OclV

the government-nom the taxes-acc it-cl raise-3sg/PS

'The government raised the taxes'

5.3.3 Focusing the Object and Verb

It has already been stated that the ground-focus partition is realized in Greek through the deployment of diverse structural resources: accent placement (on the focused constituent); word order (ground NPs are dislocated to peripheral positions, focused

[168] Tsiplakou from personal communication accepts it when the object NP is a bare indefinite.

NPs are preferred adjacent to the verb); and clitic doubling (object ground NPs are preferred doubled). The interaction between these structural devices follows a consistent pattern, independent of the grammatical function of the focused or ground NP (barring the fact that clitic doubling is only available for objects in Greek). Based on that, let us now examine the object focus contexts where the accent falls on the object NP realizing a narrow focus domain:

(27) **OBJECT FOCUS**

Ti afksise i kivernisi?

What raise-3sg/PS the government-nom?

'What did the government raise'?

a. i kivernisi afksise [$_{F}$ ti **FOROLOGIA**] SV**O**

the *government-nom raised-3sg/PS the taxes-acc*

'The government raised the taxes'

b. [$_{F}$ ti **FOROLOGIA**] afksise i kivernisi ***O***VS

the taxes-acc raise-3sg/PS the government-nom

'The government raised the taxes'

c. * [$_{F}$ ti **FOROLOGIA**] tin afksise i kivernisi *__O__clVS

the taxes-acc it-cl raise-3sg/PS the government-nom

'The government raised the taxes'

Similarly to the subject focus NP, here the accent falls on the object focus NP *ti forologia*, which can appear post-verbally (27a) or pre-verbally (27b), while the ground NP *i kivernisi* remains de-accented. When the object is clitic-doubled, the utterance automatically becomes unacceptable because clitic doubling is strictly related to the ground interpretation of object NPs and is hence disallowed with focused ones. Thus, focused objects cannot be doubled. Accent on the clitic- doubled object is unacceptable in (27c). This unacceptability is due to the conflicting information conveyed by the structural realization of accent and doubling; accent marks the object as focus, while doubling marks it as background information.

Again, the focused object is preferred when adjacent to the verb, as indicated by the unacceptability of (28b); the V**O**S order is acceptable in an object focus

context. On the contrary, the VS**O** order is not equally infelicitous with an object focus reading. These V-initial orders will be discussed in detail in section 5.7.

(28) **OBJECT FOCUS**

Ti afkise i kivernisi?
What raise-3sg/PS the government-nom?
'What did the government raise?'

a. afksise [$_F$ ti **FOROLOGIA**] i kivernisi V**O**S
raise-3sg/PS the taxes-acc the government-nom
'The government raised the taxes

b. *afksise i kivernisi [$_F$ ti **FOROLOGIA**] *VS**O**
raise-3sg/PS the government-nom the taxes-acc

Finally, verb focus is marked with accent of the verb. Again, the ground NPs may appear pre-verbally (29a) and post-verbally (29b) and the object NP is preferred doubled:

(29) **VERB FOCUS**

Ti ekane i kivernisi me ti forologia?
What did-3sg the government-nom with the taxes-acc?
'What did the government do with the taxes?'

a. i kivernisi [$_F$ tin **AFKSISE**] ti forologia S***V***O
the government-nom [it-cl raise-3sg/PS] the taxes-acc
'The government raised the taxes'

b. ti forologia [$_F$ tin **AFKISE**] i kivernisi O**V**S
the taxes-acc [it-cl raise-3sg/PS] the government-nom
'The government raised the taxes'

The verb final focus structures and their odd information structure status will be discussed in the following section.

5.4 Structural Recourses as Information Structure Constraints

In this section, I formalize the amalgamation of structural devices - phonological and syntactic means (accent placement, word order and morphosyntax) - into constraints which organize the way information packaging applies in Greek. Information structure in Greek is realized through a combination of phonological and syntactic means (cf. section 5.1).

Summarizing the discussion of the focus contexts in section 5.3, we see that the information structure in Greek is subject to the following constraints: First of all, accent will always follow the focused constituent.[169] Absence of prominence/accent is an indicator of the ground status of elements (albeit not exclusively)[170]. In fact, without the presence of the accent, a given order, say SVO, gives us hardly any indication about the ground-focus partition of the sentence. Anticipating the ensuing discussion in sections 5.5.2 and 5.5.3, this strong effect which accent has on identifying the focused constituent and on directly dividing the utterance undermines the role of word order as a strong indicator of information structure (contrary to what has been previously argued for Greek). Moreover, accent on the rightmost NP gives rises to a broad focus interpretation. This is the result of collaboration between accent and word order. The morphosyntactic manifestation of ground elements is clitic-doubling. Thus, although the lack of accent may primarily (but not necessarily) mark an element as given/ground, clitic-doubling ensures that doubled objects are ground information. Word order ensures that ground elements are found in peripheral positions (to the left or right of the focus domain). Unlike word order, clitic doubling is unambiguously associated with a ground interpretation of objects. However, unlike accent, doubling is sufficient but not necessary for the realization of ground NPs, and it affects only objects. Note, however, that although ground NPs are peripheral, it is not always the case that focused NPs are adjacent to the verb. Adjacency is observed in cases of narrow focus but it cannot be observed in all-focus instructions. In these instructions accent falls on the rightmost NP which is not adjacent to the verb (e.g., VS**O** or VO**S**). Adjacency is not a syntactic requirement (since notions of government under adjacency do not have any justification in the grammar, cf. Chapter 2) but rather an interpretational requirement that is imposed by narrow focus domains. The

[169] This assumption was the main claim argued for in Chapter 4; it is a direct consequence of the function of the Focus Interpretation Principle.
[170] Morphosyntax (doubling) also plays a role.

descriptive generalizations shown below are captured in the form of information structure constraints in Greek, as in (30), repeated here from (1).

(30) INFORMATION STRUCTURE CONSTRAINTS (GREEK)[171]

A. Syntactic constraints:

a. ***Word Order***: ground elements occupy peripheral position.

b. ***Clitic Doubling***: clitic-doubled objects carry ground information. [172]

B. Phonological constraints:

c. ***Focus:*** accent falls on the focused constituent (or part of the focus).

d. ***Given***: given or ground elements cannot carry accent.[173]

e. ***Domain***: in broad focus, accent has to fall on the rightmost constituent.

In what follows, I will briefly discuss two further syntactic restrictions on word order. Recall that pre-verbal ground objects should be doubled (Section 5.3.3). This is a restriction on word order in Greek. The obligatory status of such structures has been a matter of debate and it will be further discussed in Section 5.4.1.4. It was mentioned earlier that preverbal ground objects should be doubled, while doubling is optional with postverbal ground NPs. Indeed, examples lacking clitic doubling in preverbal positions as in (31) are considered much less acceptable by some authors (Tsiplakou 1998).

(31) ? Ti forologia (tin) afksise [$_{F}$ i **KIVERNISI**] ?OclV**S**
The taxes-acc (it-cl) raise-3sg/PS the government
'The government raised the taxes'

[171] The proposed IS constraints are based on the Alexopoulou & Keller (2001) proposal for Greek. Here, I adopt and modify the constraints for the purposes of the current analysis.

[172] With respect to the syntactic constraints on Word Order and Clitic Doubling works on Left and Right Dislocation are relevant, such as Vallduví (1992), Cecchetto (1999), Cardinaletti (2001, 2002) Samek-Lodovici (2005, 2006), Alexoupoulou & Kolliakou (2002), Iatridou (1990), Anagnostopoulou (1994), among others.

[173] Unless contrastive topics are involved.

(i) to Giorgo to sibatho, ton **ANTONI** den ton honevo me tipota
The George him-ct like-3sg, the Antoni-acc not him-cl like at all
'George I like, but Antonis I don't like him at all'

A second restriction on word order is attested in verb final orders. We assume that both the orders in (32) license narrow focus on the verb. Verb final orders, though grammatical, are treated as less acceptable in the literature. However, when clitic doubling of the object NP is involved their acceptability improves. Alexopoulou & Keller (2001) also argue that they reach full acceptability if more material is added after the verb. This happens, in my opinion, because, if more material is added, the verb ceases to be in clause-final position. It is in clause-medial position and what follows is the actual complement of the verb. Note that the context in (32) is a special, context or a correction context (Ladd 1996), which usually induces contrastive focus. The contrast here is between the verbs *dropped* as opposed to *raise*.

(32) a. Ti ekane i kivervisi me ti forologia? [$_{F}$ Tin **KATEVASE**]?
What did-3sg/PS the government-nom with the taxes-acc? It-cl lowered-3sg
'What did the government do with the taxes? Did it LOWER them?'

b. (Ohi,) ti forologia i kivernisi [$_{F}$ tin **AFKSISE**] OScl**V**
(No,) the taxes-acc the government-nom it-cl raise-3sg/PS
'(No,) the government RAISED the taxes'

c. (Ohi,) i kivernisi ti forologia [$_{F}$ tin **AFKSISE**] SOcl**V**
(No,) the government-nom the taxes-acc it-cl raise-3sg/PS
'(No,) the government RAISED the taxes'

Now, as shown before, both of these sentences allow narrow focus on the verb. The ungrammaticality of the examples (33a) and (33b) indicates that verb final orders cannot function as answers to questions inducing VP focus. This means, as shown in (32), that the orders with the verb in final position are only congruent with a narrow focus structure on the verb. This suggests that marking the verb as focus as a result of neutral prosody (prominence on the final/rightmost position) does not induce ambiguity; itdoes not allow focus projection above the verb itself.

(33) Ti ekane i kivervisi?
What did-3sg/PS the government-nom
'What did the government do?'

a. * ti forologia i kivernisi [$_F$ tin **AFKSISE**] *OScl**V**[174]
the taxes-acc the government-nom it-cl raise-3sg/PS
'The government raised the taxes'

b. * i kivernisi ti forologia [$_F$ tin **AFKSISE**] *SOcl**V**
the government-nom the taxes-acc it-cl raise-3sg/PS

In effect, none of the above orders can license a VP or sentence focus as shown in (33). Also, subject final structures cannot be answers to VP or V focus questions. More specifically, the subject cannot project focus to the verb in (34a-b).

(34) Ti ekane i kivervisi?
What did-3sg/PS the government-nom
'What did the government do?'
Ti ekane i kivervisi me ti forologia?
What did-3sg/PS the government-nom with the taxes-acc
'What did the government do with the taxes?'

a. *[$_F$ afksise **TI FOROLOGIA**] i kivernisi *__VO__S
raise-3sg/PS the taxes-acc the government-nom
'The government raised the taxes'

b. *[$_F$ ti forologia **AFKSISE**] i kivernisi *__OV__S
the taxes-acc raise-3sg/PS the government-nom
'The government raised the taxes'

It has been suggested that the information structure constraints introduced in (30) play a significant role in the realization of information structure in Greek. What we also expect following Keller & Alexopoulou (2001) is that the weight of acceptability difference caused by each of these factors will reflect its relative importance.

[174] However, if the discourse is continued example (32a) can conceivably be the answer to a question such as *What happened with the taxes*?
(i) ti fologia i kivernisi tin AFKISE, ala i epomeni tin KATEVASE
the taxes-acc the government-nom it-cl raise-3sg/PS but the next-acc it-cl dropped-3sg/PS
'The government raised the taxes, but the next day it lowered them'

Anticipating the discussion to follow, we expect that presence or absence of accent placement will induce the strongest effect. If one takes into consideration the unambiguous association between accent placement and focus (Chapter 4: 4.2) we can only assume that the role of prosody provides hearers with a strong indication for the information structure of an utterance. Moreover, the restriction that doubled NPs cannot be focused, is also expected to produce strong (grammaticality/ungrammaticality) effects; doubling is also a strong marker of information structure. Just as accent placement, clitic doubling is an unambiguous marker of information structure.

Finally, we expect violations of word order preferences to trigger the weakest effects. The reason behind this is the following: given its ambiguity, word order is an additional, but not so reliable cue for detecting the ground-focus partition of a sentence. Note as well that, due to the ambiguity of word order, some word orders will satisfy the information structural requirements of several contexts (e.g., SVO- S**VO**, S**V**O, **SVO** and **S**VO). This is actually expected under the S-IS underdeterminacy hypothesis. One a second note, word order is weaker because it is flexible, since a particular focus context –say object focus- can be satisfied by multiple word orders (e.g., object focus – SV**O**, **O**VS, V**O**S etc). Speakers may go either way between expressing object focus with no severe effect in the acceptability of the utterance. The ambiguity of word order will be discussed in Section 5.6.

In the next section, I examine the S-IS underdeterminacy hypothesis against the mapping of syntactic constituent to information structure categories realizing *ground* information. The effects of the phonological constraints of information structure in (30) can be obliquely retrieved from the discussion in Chapter 4: 4.5. Here, I principally examine the syntactic constraints on word order: the first constraint is word order: ground elements are peripheral, the second constraint is clitic doubling: preverbal objects must be doubled.

5.4.1 Ground Marking

In this section, I look at the distribution of ground information in Greek. More specifically, I examine the mapping between syntactic (non)-constituents into given

elements, links and tails. I look at how the distribution of links and tails is affected by restrictions on word order and what contextual factors allow for specific distributions.

Recall that, contrary to the predictions of syntax-based cartographic approaches, the componential mapping between syntax, prosody and discourse functions proposed in this thesis does not yield a one-to-one pattern. This is evident in the following: (i) nuclear stress is necessary but not sufficient for realizing focus: a combination of nuclear stress and syntactic constituency is utilized for realizing wide focus (see section 5.2.1 and 5.3.1), (ii) clitic-doubling is sufficient but not necessary for realizing ground: foci cannot be clitic doubled (see section 5.3.4) but there exist elements in the ground part of the utterance which are not doubled (e.g. topicalization), (iii) object NP doubling is not exclusively associated with the notion of topichood (see sections 5.4.1.2 and 5.4.1.3). There is a distinction in the literature between CLLD-ed elements and clitic doubling; the latter does not occur in the left periphery but rather within the sentence. The general consensus in the literature is that these two constructions are largely distinct; clitic doubling, unlike CLLD does not involve topichood (Anagnostopoulou 1994, Iatridou 1995, Valiouli 1994, Alexopoulou & Kolliakou 2002). These clitic-doubled constructions correspond to the other element of the ground: the tail (Vallduví 1992, Alexopoulou 1999, Baltazani 2002). Thus, the clitic-doubled expression in (36) is a tail in Vallduví's terms.

(35) **TOPICALIZATION**

I ergazomeni tu metro sinedriasan xthes gia ti lipsi sindonismenon kiniseon sxetika me ta oikonomika etimata tous.

'The metro workers met yesterday to decide on coordinated moves in relation to their financial demands'

[**TOP** Tin apofasi tous gia apergia] anankoinwsan

The decision-acc theirs-poss for strike-acc announced-3pl

ta mesa mazikis enimerosis

the means-nom/Pl mass-gen information-gen -nom/PL

'Their decision to go on strike was announced by the mass media'

(36) **CLRD**

Tha borouses na tis agoraseis [**F TRIANDAFILA**];*(Ta)* LATREVI [ta triandafila].

Will-*could-2sg to cl-her buy-2sg roses-acc. cl-them adore-3sg the roses-acc*

'You could buy ROSES for her. She adores roses'

5.4.1.1 Ground material is Peripheral: Tails

Let us exemplify further the function of tails in Greek. According to Vallduví (1992), Tails represent given information (cf. section 5.2.2); they generally occur after the focus phrase and as post-focal material they are prosodically realized as de-accented (cf. S-P mapping proposed in Chapter 4:4.5).

Let us look at the following set of examples in (37) and (38):

(37) Me pion xorepse i Xristina sto party?
With whom did Christina dance at the party?
a. Xorepse [$_{\mathbf{F}}$ me ton **KOSTA**]
dance-3sg/PS with the Kosta-acc
'She danced with Kostas'
b. [$_{\mathbf{F}}$ me ton **KOSTA**] xorepse
with the Kosta-acc dance-3sg/PS

(38) Ti ekane i Xristina sto party?
What did Chistina do at the party?
a. [$_{\mathbf{F}}$ xorepse me ton **KOSTA**]
dance-3sg/PS with the Kosta-acc
'She danced with Kostas'
b.?[$_{\mathbf{F}}$ me ton **KOSTA**] xorepse
with the Kosta-acc dance-3sg/PS

In example (37) the question '*with whom did Chistina dance at the party?*' requires an answer with narrow focus on the indirect object *me ton Kosta*, whereas the question in example (38) '*what did Christina do at the party?*' requires an answer where the whole VP is in focus. According to Baltazani (2002) both answers in (37a) and in (38a) have the same prosodic realization, i.e. the NPA on the object and a pre-nuclear pitch accent on the verb. The utterance in (37b) and (38b) is realized with the NPA on the moved object and no accent on the verb, which is de-accented. In example (37) both answers are acceptable for the question; on the contrary the answer in (38b) is not acceptable as an answer to the question in (38). We attribute the difference to the following reason: in (37b) the object moved to the left carries the accent and the verb

like all post-nuclear material must be de-accented; it becomes the tail. The moved order does not make a difference because the information carried by the verb is old/given and does not have to carry any accent. In the case of (38) though, the whole VP is F-marked since it is not given. The movement leaves the verb in the tail, despite the fact that it is not given; hence, the utterance becomes unacceptable. Overall, it seems that material in the tail must be old or given. However, as (38a) indicates given material does not have to be in the tail. The verb there is given and it does not occur in the tail; still the utterance is felicitous in the context. Below I repeat the answers of the examples in (37-38) exemplifying the category tail.

(39) a. [$_{\mathbf{F}}$ xorepse me ton **KOSTA**]
b. Xorepse [$_{\mathbf{F}}$ me ton **KOSTA**]
c. [$_{\mathbf{F}}$ me ton **KOSTA**] [xorepse]$_{\mathbf{TAIL}}$

Baltazani (2002) argues that what happens in cases such as the above is that under one prosodic realization two information structure objects are neutralized: in (39b) the verb is not part of the focus or the tail. In terms of its prosody, it is realized as the verb in (39a) but informationally, its status is the same as the verb in (39c), that is, it is given information.

Moreover, doubled objects dislocated to the right or post-verbally involve right dislocation, as also shown in example (36). Right-Dislocated and Clitic Right-Dislocated NPs appear after the element that carries the nuclear stress as in (40). These structures are considered tails:

(40) **CLRD**
a. i Eleni ta afise[$_{\mathbf{F}}$ **PANO STI MIXANI**]**[**ta klidia tu autokinitu]$_{\mathbf{TAIL}}$ SclV**PP**
the Helen-nom cl-them left-3sg the keys-acc the car-gen
'Helen left the car key on the engine'

b. Min tous milas gia [$_{\mathbf{F}}$ ti **MARIA**]; (*tin*) fovunde [ti Maria]$_{\mathbf{TAIL}}$ clV(S)**O**
not-them speak-2nd for the Maria-acc; cl-her afraid-3pl everyone the Maria-acc
'Do not talk to them about Maria; everyone is scared of Maria'

c. Den eprepe na tis feris [$_{\mathbf{F}}$ **SKILADIKA]**; (*ta*) sihenete [ta skiladika]$_{\mathbf{TAIL}}$ clV(S)**O**
you shouldn't have brought `dog-songs'; cl-them-acc detest-3sg the`dog-songs'
`You shouldn't have brought her ``dog-songs''. She detests 'dogsongs''.

Hence, the duplicated phrase does not occur in the left periphery, but rather within the sentence. Though the pragmatics of this construction remains by and large unexplored, there is consensus in the literature that clitic doubled NPs are not on a par with CLLD-ed NPs, i.e. they do not denote topics (see Anagnostopoulou 1994, Iatridou 1995, and, for the pragmatic aspects of clitic doubling, Valiouli 1994). The clitic doubled NPs *ta skiladika* and *ti Maria* in (40b,c) above correspond to some other element of the ground *called tail.*

5.4.1.2 Linkhood and Left-Dislocation

Having identified the information structure category tail let us now look at the realization of topics or links in Greek. Recall that Vallduví's (1992) model makes insightful crosslinguistic predictions in showing that different languages encode information structure differently. In Catalan the information primitive categories of the sentence are syntactically encoded through constituent order. The link part of the sentence is the topicalized or clitic-dislocated material to the left of the sentence, the material which is (clitic)-dislocated to the right consists of the tail, whereas focus material is the only material that remains within the main clause.[175]

A number of authors have argued that the NPs in Greek which undergo Topicalization, CLLD as in (41-42) are the *topic* or *theme* of the sentence from an informational point of view (Agouraki 1993; Anagnostopoulou 1994, Alexopoulou 1999; Philippaki-Warbuton 1982; Schneider-Zioga 1994; Sifaki 2003; Tzanidaki 1994; Tsimpli 1995, Tsiplakou 1998). The following examples in (41) and (42) are instances of Topicalization and CLLD respectively.

[175] For a full explanation of Vallduví's model for Catalan, English see Vallduví & Engdahl (1996), Vallduví & Villnuka (1998), Alexopoulou (1999).

(41) **TOPICALIZATION**

a. [$_{\text{TOP}}$ Tu Alexandrou] tilefonise i Maria mesa sti nyxta O_TVS
the Alexander-gen ring-3sg/PS the Maria-nom in the middle of the night'
'Maria called Alexandros in the middle of the night'

b. [$_{\text{TOP}}$ Ta isitiria] eklisan i fitites me tin Olimpiaki O_TVS
the tickets-acc book-3sg/PS the students-nom with the Olympic
'The students booked the tickets with Olympic Airways'

c. [$_{\text{TOP}}$ Ta grammata] estile i Maria ston Petro xtes O_TVS
the letters-acc send-3sg/PS the Maria-nom to the Peter-acc yesterday
'Maria sent the letters to Peter yesterday'

(42) **CLLD**

a. [to Jani]$_{\text{LINK}}$ [ton apelise to afendiko]$_{\text{TAIL}}$ [$_{\text{F}}$ to **SEPTEMVRIO**] OclVS**Adv**
the-John-acc cl-him fire-3sg/PS the boss-nom the September
'The boss fired John in September'

b. [ta mathimatika]$_{\text{LINK}}$ [o Janis ta katalaveni]$_{\text{TAIL}}$ [$_{\text{F}}$ **AMESOS**] OSvlV**Adv**
the mathematics-acc the John-nom cl-them understand-3sg immediately
'John understands mathematics very quickly'

It looks like the preposed NPs convey old/given information, or, in other terms, background or discourse-linked (D-linked) information (Pesetsky 1987, Reinhart 1981, 1995). Thus, in Vallduví's terms they can be analysed as links that point to the place where new information can be added. Links in Greek according to the above mentioned authors prefer to appear pre-verbally. Following Alexopoulou & Kolliakou (2002), I will map links to CLLD-ed NPs and topics to Topicalized NPs. As it will be demonstrated in the following sections (5.4.1.3-5.4.1.4), various pragmatic and semantic differences between Topicalized and CLLD-ed NPs indicate that only the former are links in Greek. I will further argue that the definition of links as the current locus-of-update cannot be maintained as it currently stands, since it resists extension to a satisfactory account of the wide scope readings invariably associated with CLLD-ed NPs.

5.4.1.3 Contrastive Topics and Links

We proceed in our discussion by looking at an additional information structure category which will enlighten our discussion of the realization of both focus and preverbal given material. This is the information structure unit called contrastive topic (CT). An example of a CT is given in (43):

(43) Ti tha foresoume sto party?
What will we wear at the party?
Den ksero, pandos [o Kostas]$_{\mathbf{CT}}$ tha valei [$_{\mathbf{F}}$ **KOSTOUMI**]
Not know, though the Kostas-nom will wear-3sg suit-acc
'I don't know; Kostas though will wear a suit'

Büring (1997, 2003) offers a model of information structure which relies on a purely pragmatic version of the relation between intonation and information structure, in which there exist three information units: CT, Focus and Background.[176] He proposes a theory which predicts the (non)-occurrence of the accent patterns associated with focus and CT. In particular, Büring uses the term focus to refer to a constituent marked by an A-accent. It should be noted that he does not make a distinction between new information focus and contrastive focus. Büring uses the term CT to refer to a constituent marked by a B-accent. Let us examine in brief how his model works looking first at the famous Jackendoffian example in (44) (cf. Jackendoff 1972) - assuming a context such as the one in (44):

(44) Several people ate several types of food at a party.

(45) a. A: Who ate what? What about Fred? What did he eat?
B: [**[Fred]**$_{\mathbf{CT}}$] [ate the [**beans]**$_{\mathbf{F}}$]
L*+H L- H% H* L - L%
b. A: Who ate what? What about Beans? Who ate them?
B: [**[Fred]**$_{\mathbf{F}}$] [ate the**[beans]**$_{\mathbf{CT}}$]
H* L L*+H- L%

[176] The notion of contrastive topic is assumed in many theories of IS such as the Structured Meaning approach (Krifka 1991, 1993 and later) and the Alternative Semantics approach (Rooth 1992, 1993). Büring also works within the alternative semantics approach, but differs from both Rooth and Krifka, as he is interested in the relation between accent patterns and information structure categories.

In (45a), the question is about which person ate what kinds of food, counting on 'food'. In (45b), the question is the same but it questions the 'person' and not the 'food'. Depending on the question, the intonation contour of the answer changes. The item that the question is counted on has a rising contour (L*+H pitch accent, Beckman & Pierrehumbert 1986) and the answer to the wh-phrase has a falling contour (H* pitch accent followed by L-phrase accent). The L*+H accented item has been interpreted as carrying CT and the H* item has been interpreted as carrying Focus. The Background is the given material, and Focus answers the wh-expression in the question, with respect to the notion of Question under Discussion (QUD) (Roberts 1996). QUD is the question in (44) and there are a number of questions which are formed under this, which are called 'sub-questions'. Büring's theory predicts when the presence of a CT is optional, obligatory or impossible by providing formalism accounting for their use and interpretation. With respect to CTs, Büring argues that CT marking is obligatory with implicit sub-questions, while it is optional with explicit subquestions. Let me explain further

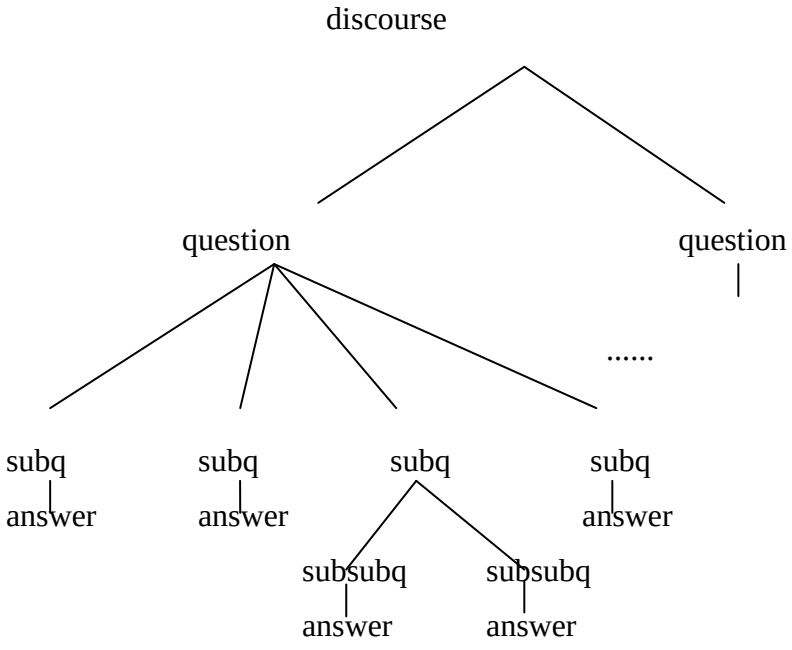
Topics mark deviance from the question; the marking of the CT indicates deviance from the question, as it answers a sub-question to the question. Topics in Greek can be used in a similar way. Consider the example in (43) repeated here as (46). The topic *Kostas* marked as CT diverges from the complete answer and indicates that there could be other questions referring to other people at the party besides *Kostas* and these questions are of the sort '*what is everyone wearing*?':

(46) Ti tha foresoume sto party?
What will we wear at the party?
Den ksero, pandos [o Kostas]$_{\mathbf{CT}}$ tha valei [$_{\mathbf{F}}$ **KOSTOUMI**]
Not know, though Kostas-nom will wear-3sg suit-acc
'I don't know; Kostas though will wear a suit'

From a formal point of view, Büring (1997) follows Rooth (1985, 1992) in that the focus value specifies an alternative set interpretation, the focus alternative set (Chapter 3: 3.3.1). This focus alternative set is a set of propositions such as: F = {'Costas will wear a suit, 'Mary will wear a pink dress', 'Nikos will wear a tie', …}. Based on the focus value set, he introduces a formal semantic object, the CT value of the sentences with contrastive topics. The CT value is defined as a set of question

meanings of the form ‘What is X wearing?’ which is derived from the answer by substituting the CT marked element: T= {‘What is Costas wearing?’, ‘What is Mary wearing?’, ‘What is Nikos wearing?’} Now, if we assume that the questions in set T can receive an interpretation from set F then informally, T is a superset of propositions which can be formed by substituting for each question the set of propositions it defines. T= {‘Costas is wearing a suit’, ‘Costas is wearing a pink dress, Costas is wearing a tie...}, {‘Mary is wearing a suit’, ‘Mary is wearing a pink dress’, ‘Mary is wearing a tie’...}, {‘Nikos is wearing a suit’, ‘Nikos is wearing a pink dress, Nikos is wearing a tie,...}. The marking of CTs and the marking of Focus provide variables that can be substituted by the constituents they mark. This can take the form of an open proposition such as ‘X is wearing x, where X ranges over individuals and x ranges over clothes. Based on the QUD, CT marking implies that one of the sub-questions is answered and that other sub-questions of the same QUD are part of the same discourse. This is represented in the hierarchical model of discourse structure proposed below in Büring (1997) in (47):

(47)



Each node in such a discourse tree is called a Move and discourse-trees consist of implicit and explicit Moves. The function of the CT in paired-list readings is to indicate the explicit or implicit presence of sub-questions included in the superset on top of the questions asked. Thus, the sentence in (46) can be used as an answer to a

question such as '*Who is wearing what?*' with the InfoStructrure: CT, Background, and Focus as in (48). The topic marking of the subject implies that the other people present in the discourse (party) besides Kostas and the speaker chooses to answer the question using a subset of the sort '*What is everyone wearing?'* such as '*What is Kostas wearing?'*, '*What is Mary wearing?,'What is Nikos wearing?'* etc.

(48) [Kostas]$_{\mathbf{CT}}$ is wearing [$_{\mathbf{F}}$ a **SUIT**]

On the contrary, if the CT marking appears as in (49) where the object is the CT, then the CT marking of the object implies that there are other clothes in the discourse and the speaker chooses to answer the main question using a subset of questions such as '*Who is wearing trousers?' 'Who is wearing a suit?', Who is wearing a skirt?* etc.

(49) [$_{\mathbf{F}}$ **Kostas**] is wearing [a skirt]$_{\boldsymbol{CT}}$

Let us now return to more examples and see how CTs, links and tails are realized in a more principled fashion in Greek and more particularly what CTs can do. Consider the following example of contrastive links in (50):

(50) a. Pu ine ta maxeropiruna;
where is-3pl the cutlery-acc?
'Where is the cutlery?'

b. [ta maheria]$_{\mathbf{CL}}$ ine sto [$_{\mathbf{F}}$ **PROTO**] sirtati kai [ta pirunia]$_{\mathbf{CL}}$ sto [$_{\mathbf{F}}$ **DEFTERO**]
the knives are in-the first drawer and the forks in the second
'The knives are in the **first** drawer and the forks in the **second**'

c. [ta maheria]$_{\mathbf{CL}}$ ta vazume sto [$_{\mathbf{F}}$ **PROTO**] sirtati kai [ta pirunia]$_{\mathbf{CL}}$ sto[$_{\mathbf{F}}$ **DEFTERO**]
the knives them-cl put-1PL in the first drawer and the forks in the second
'We put the knifes in-the **first** drawer and the forks in-the **second**'

d. * ta vazume sto [$_{\mathbf{F}}$ **PROTO**] sirtati [ta maheria]$_{\mathbf{CL}}$ ke sto [$_{\mathbf{F}}$ **DEFTERO**] [ta pirunia]$_{\mathbf{CL}}$
them-cl put-1-pl in-the first drawer the knifes and in-the second the forks

(examples from Alexopoulou 1999)

In the above example there is a contrast between knives and forks in the same sentence. Both contrastive links appear before the verb and bear no main stress in

(50b-c). Example (50d) is ungrammatical because the links appear to be dislocated to the right and this is usually the position occupied by tails not links. It seems that although the interpretation of topics is still given/ground information in any position - preverbal or post-verbal- only the preverbal position can maintain their function as links; the post-verbal position is ungrammatical. This is probably due to the fact that usually tails occur in post-verbal position. There seems to be the difference between links and tails; the two information structure primitive units are not interchangeable, as we would expect in a free word-order language. Below, I provide a provisional explanation as to why this happens.

Consider the example in (51). In agreement with Alexopoulou (1999), I assume that under the influence of contextual factors the acceptability of sentences varies. For instance (51b) seems much better than (51c) and is fully acceptable under the context question in (51a).

(51). a. Pote tus ta edoses ta dora;
when them-cl-dat them cl-acc gave-3sg the presents?
When did you give them the presents?

b. ston anipsio mu ta edosa tin Triti [$_F$ to **PROI**] kai
to-the nephew of-mine them-cl gave-3sg on Tuesday in-the morning and
stin anipsia mu tin Triti [$_F$ to **APOGEVMA**]
to-the niece of mine on Tuesday the evening
'I gave them to my nephew on Tueday **morning** and to my niece on Tuesday **evening**'

c. ? ta edosa tin Triti [$_F$ to **PROI**] ston anipsio mu kai
them-cl gave-3sg on Tuesday in-the morning to-the nephew of-mine and
tin Triti [$_F$ to **APOGEVMA**] stin anipsia mu
on Tuesday the evening to-the niece of mine
(example modified from Alexopoulou 1999)

Example (51c) improves in acceptability in a different context. For instance, the sentence can be acceptable if the question asks whether he/she gave the gifts to the children as in (52). The temporal adverbials *on Tuesday*, *in the morning* and *in the evening* can still carry the main stress of the sentence. However, the stress can be moved to the indirect object *nephew* and *niece* respectively.

(52) telika ta edoses sta paidia ta dora; Pote;
finally them-cl gave-3sg to-the children the presents? When?
Did you finally give the presents to the children? When?

Let us now see an example of the link-focus type where the link is not contrastive. Under the context question in (53a) we can get the following possible link-focus partitions.

(53) a. Pes mu gia tin Eleni; pos ta pige me tin omilia sto synedrio;
Tell me about Helen; how did she go with the presentation in the conference?
b. [tin omilia tis Elenis]$_{\mathbf{LINK}}$ [$_{\mathbf{F}}$ tin epenesan **OLI**];
the talk-acc of Helen her-cl praised-3pl all-nom;
itan ekseretiki parousiasi-nom
was-3sg exceptional presentation
'Helen's talk was praised by everyone; it was an exceptional presentation'
c. [$_{\mathbf{F}}$ tin epenesan **OLI**] [tin omilia tis Elenis]$_{\mathbf{Link}}$;
her-cl praised-3pl all-nom the talk-acc of Helen;
itan ekseretiki parousiasi-nom
was-3sg exceptional presentation
'Helen's talk was praised by everyone; it was an exceptional presentation'

The paradox here is that although the word order in (53b), in which the links appear preposed - either through Topicalization or CLLD - is preferred by speakers, sentence (53c), in which the link appears post-verbally as a result of Right Dislocation, are also highly acceptable. According to Alexopoulou (1999) there are also cases in which, even though both positions are acceptable, the link is preferable dislocated to the right (for further discussion see Alexopoulou 1999).

The same can also be true for tails. Tails, although they generally occur post-focally, as already shown in section 5.4.1.1, they can also sometimes appear in pre-focal positions, as in (54) below:

(54) Min milas gia podosfero sto Jani
Don't talk about football to John
a. [$_{\mathbf{F}}$ To **MISI**] [to podosfero]$_{\textbf{TAIL}}$
cl-it hate-3sg the football-acc
'He **HATES** football'
b. [To podosfero]$_{\textbf{TAIL}}$ [$_{\mathbf{F}}$ to **MISI**]
c. [O tipos]$_{\textbf{LINK}}$ [$_{\mathbf{F}}$ to **MISI**] [to podosfero]$_{\textbf{TAIL}}$
the lad-nom cl-it hate-3sg the football
'The lad **HATES** football'
d. [O tipos]$_{\textbf{Link}}$ [to podosfero]$_{\textbf{TAIL}}$ [$_{\mathbf{F}}$ to **MISI**]
e. [To podosfero]$_{\textbf{LINK}}$ [$_{\mathbf{F}}$ to **MISI**] [o tipos]$_{\textbf{TAIL}}$

Hence, although it seems that contrastive links have to be preverbal, it is unclear in non-contrastive word orders whether, how and under what conditions the distribution of links and tails affects the word order. It is possible that the appearance of *o tipos* and *to podosfero* in (54) encodes pragmatic functions independent of the ground-focus partition. It seems that contextual factors affect the choices of interlocutors.[177] Anticipating the discussion to follow, this remark points towards two main issues: First, the independence of word order from information structure and second, and,

[177] In these examples, there is no need for either a link or a tail. By repeating the relevant NPs the speaker is probably trying to achieve certain pragmatic effects, such as adding emphasis to the content. However, this explains their repetition but not their order. Valliouli (1994) offers an explanation for Right Dislocation and argues that Right Dislocated phrases, in addition to introducing a *latent discourse* topic, often serve pragmatic functions such as the speaker's empathy or contempt. So, it is possible that the appearance of the NPs in optional positions encoded pragmatic functions which are regulated through word order but are *independent* of the focus-given IS partition; they are orthogonal to it. Intuitively, this kind of discourse effect can explain their freer distribution in the order, their relatively unrestricted positioning as well as their optional presence.

If we try to impose a hierarchy of 'givenness' we can probably argue that: tails are higher in the hierarchy since they involve explicitly given material, contrary to topics/links which are lower in the hierarchy since they involve less given or implicitly given material (not mentioned anywhere in the discourse but implied), as in the case of contrastive topics. This implies that clitic-doubled objects and topics are freer to occur dislocated to the right in the tail position or prefocally if they convey explicitly given information. This explains the variation in acceptability among the word orders in (51-52). If clitic doubled objects and topics do not carry explicitly given information, then they cannot occur in the tail position. However, if the information of the link/topic in not implicitly given rather explicitly then again their position is more freely distributed and their occurrence lies on pragmatic/contextual/discourse factors which, in my opinion, are independent of the focus/ground partition.

more importantly, the fact that word order preferences are in effect weak indicators of the information structure partition.

Based on the above discussion, here, I assume that links in Greek are realized preverbally and precede focus constituents, while tails appear post-focally, dislocated to the right. With respect to pre-focal tails, it could be argued that they are evident when the link in the sentence is not a contrastive topic (54c-d) or when there is no link in the sentence (54a-b). In other words, the existence of pre-focal tails should not be puzzling, in my view, since it is given information and as such it can appear either in the tail or pre-focally (cf. the discussion on (39)).

5.4.1.4 Preverbal objects must be doubled: Evidence from CLLD

In this section, I discuss the mapping of links and CLLD constituents in preverbal syntactic position. The discussion will provide evidence for the constraint proposed in section 4.3.2 that preverbal objects have to be doubled; a syntactic (word order) and simultaneously a morphological requirement. Let us see in more detail this interaction between context, topics/links and word order.

In (55), all the utterances (55b-e) can be felicitous answers to the same question in (55a). Nevertheless, even though the four answers (55b-e) are appropriate answers to the same single question, they are not always interchangeable because the use of each sentence makes different implications with respect to their context.

(55) a. ke tin tileorasi pjos tin agorase;
and the television who it-cl bought-3sg?
'And the television? Who bought it?

b. [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin agorasan tin tileorasi]$_{\mathbf{TAIL}}$ **S**clVO
the in-laws-nom it-cl bought-3sg the television-acc
'The **parents-in-law** bought the television'

c. [tin tileorasi]$_{\mathbf{LINK}}$ tin agorasan [$_{\mathbf{F}}$ ta **PETHERIKA**] OclV**S**
the television-acc it-cl bought-3sg the in-laws-nom
'The parents-in-law bought the television'.

d. [tin tileorasi]$_{\textbf{LINK}}$ [$_{\textbf{F}}$ ta **PETHERIKA**] [tin agorasan]$_{\textbf{TAIL}}$ O**S**clV
the television-acc in-laws-nom it-cl bought-3sg
'The parents-in-law bought the television'.

e. [tin agorasan]$_{\textbf{CT}}$ **[**$_{\textbf{F}}$ ta **PETHERIKA**] [tin tileorasi]$_{\textbf{TAIL}}$ clV**S**O
it-cl bought-3sg the in-laws-nom the television-acc
'The parents-in-law bought the television'

In all sentences in (55), regardless of word order, the subject *ta petherika* carries a focus pitch accent (H*, L+H*), since it is the constituent that corresponds to the wh-element in the question. The prosodic marking of the focalized as well as the non-focalized material partitions the utterances, which are divided in two groups depending on the order of the focused vs. ground material. Sentence (55b) is different from the other three in terms of both word order and prosodic marking of the non-focal material: it has SVO order and everything except the subject is de-accented, forming the tail (cf. Chapter 4). With respect to the remaining utterances, in the utterance in (55c) the object and the verb appear to the left of the subject and the fronted material carries pitch accents, both carrying pre-nuclear accents (Baltazani 2002).[178] The object, *tileorasi*, forms a topic phrase which is an independent prosodic unit as it realizes a pitch accent and a tone boundary (L* H). The verb carries the pre-nuclear pitch accent (L*+H). In (55d), the object is again preposed to the left carrying the pre-nuclear accent and the verb which appears after the focus is the tail. Here, we get a typical link-focus-tail partition of the sentence. In (56e) we get exactly the same articulation of information structure partition, nonetheless, the order of the material performing the interpretive function of link and tail is the reverse; the verb is preposed and forms the link now, and the object is postfocal and the tail.

As was discussed in Section 5.4.1.3, topics in Greek behave similarly to their counterparts in English (Büring 1997, 2003; Roberts 1996). They designate that there might be a subset of questions which are implicitly or explicitly present or included in the superset question initially asked (cf. section 5.4.1.3). Recall that in example (45) 'Fred$_{\textbf{CT}}$ ate the beans$_{\textbf{F}}$', the topic marking implies that there are other relevant people in the discourse and the question is answered by a set of sub-questions, going person by person. If, on the contrary, the speaker chooses to go dish by dish, the topic

[178] According to Baltazani (2002) and Baltazani & Jun (1999) topics and material preposed before the main focus of the sentence carry pre-nuclear pitch accents (cf. also Chapter 4).

marking implies that there are other relevant dishes and the partition of the sentence will be 'Fred$_{\mathbf{F}}$ ate the beans$_{\mathbf{CT}}$'.

Bearing the above assumptions in mind, we can see how the link and tail division interacts with word order to affect the acceptability of certain contexts over others. Consider the following example in (56):

(56) Ke oles tis ilektirikes siskeves pjos tis agorase?
and all the electrical devices-acc who-nom them-cl bought-3sg?
'And who bought all the electrical devices?

a. * [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin agorasan tin tileorasi]$_{\mathbf{TAIL}}$ **S**clVO
the parents-in-law-nom it-cl bought-3sg the television-acc
'The parents in-law bought the television'

b. [tin tileorasi]$_{\mathbf{CT}}$ tin agorasan [$_{\mathbf{F}}$ ta **PETHERIKA**] OclV**S**
the television-acc it-cl bought-3sg the in-laws-nom
'The parents-in-law bought the television'.

c. [tin tileorasi]$_{\mathbf{CT}}$ [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin agorasan]$_{\mathbf{TAIL}}$ O**S**clV
the television-acc the in-laws-nom it-cl bought-3sg the
'The parents-in-law bought the television'.

d. * [tin agorasan]$_{\mathbf{CT}}$ [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin tileorasi]$_{\mathbf{TAIL}}$ clV**S**O
it-cl bought-3sg the in-laws-nom the television-acc
'The parents-in-law bought the television'

f. * [tin agorasan tin tileorasi]$_{\mathbf{CT}}$ [$_{\mathbf{F}}$ ta **PETHERIKA**] clVO**S**
it-cl bought-3sg the television-acc the in-laws-nom
'The parents-in-law bought the television'

g. * [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin tileorasi tin agorasan]$_{\mathbf{TAIL}}$ **S**OclV
the in-laws-nom the television-acc it-cl bought-3sg
'The parents-in-law bought the television'

In (56) only two out of the six word orders are possible. This is because only two out of the six possibilities realize the object *tin tileorasi* in contrastive topic or link position. They differ only in the position that the verb occupies. In (56c) the verb precedes the focused position, whereas in (56d) the verb is in the tail position However, the position of the verb is independent of any restrictions on its distribution, since it is already discourse given element, so it can appear in either order.

In all four inappropriate examples, the source of the problem lies in the contrast created between the topics of the current sentences with respect to other relevant entities implied by the context question. What is common between the unacceptable word orders is that they position the object *tin tileorasi* in the tail position. For example, the answer in (56a) is inappropriate because the object *tin tileorasi* is in the tail without having been mentioned in the context and as we have already seen, material that has not been mentioned in discourse cannot be in the tail. For the same reason, examples (56d, f, g) are also inappropriate. The tail specifies *how* updates of information should take place. The presence of a tail indicates that new information cannot just be added to the filecard (in Vallduví's terms) as a new record. Rather, it should either complete or alter an already existing record in the current filecard. Thus, tails can only host given material or already mentioned material. Now, the topic/link marked object, given its prosodic marking, indicates that it is part of a discourse strategy which implies that the speaker chooses to answer the question by using one of the relevant entities in the group of *electrical devices* in implicit contrast with the others. Crucially, the material in the topic phrase counts as given in the discourse even though it has not been previously mentioned. Baltazani (2002, p.91) successfully argues the following about topics/links in Greek: 'When the speaker topic marks a phrase that is uttered in the context for the first time she performs two actions: she introduces the topic making it a relevant part of the discussion and she also retroactively declares it part of the background for her own utterance by implying an unspoken but understood question which contains that topic material'.

Thus, the ungrammaticality of the examples in (54a, d, f, g) is explained in the following way: the object *tin tileorasi* is only one of the electrical devices that was bought and the question presupposes the presence of many of them. This being the case, object *tin tileorasi* should be realized as CT or CLLD-ed link and not as a tail. CTs and CLLD-ed links cannot be tolerated in the post-focal tail position; the contrastive topic/link must be found in pre-focal position, since it conveys the marking of a contrast of a set of existing entities in discourse. In this way (56b) and (56c) are grammatical; in both cases, the object *tin tileorasi* is topic marked and this prosodic marking indicates (pre-focal nuclear pitch accent) that the speaker is following a 'dish by dish' strategy of answering the question in (56) and his/her answer implies there are other relevant dishes in the discourse. In the following

section, building on the above disussion, I will further discuss the above reasoning with respect to the ungrammatical cases in (56) in the following section.

Combining our discussion on Topic marking (Büring 1997, 2003) with the discussion on the examples in (54-56) above we observe that the function of links is *only* performed by CLLD-ed elements and not by Topicalized elements. Indeed, the fact that CLLD-ed NPs realize links has been argued by a number of authors (Anagnostopoulou 1994; Philippaki-Warbuton 1985; Tsimpli 1995, Alexopoulou & Kolliakou 2002).

Alexopoulou & Kolliakou (2002) argue that the CLLD-ed NPs establish a non-monotone anaphoric relation with a member of an established salient discourse set functioning as 'subselectional' links in the sense of Hendricks and Dekker (1996). Examples (57a) and (57b) are subselectional topics/links while (57c) is a relational one.

(57) O kathigitis glosologias edose stus fitites vivliografia ...
'The professor of linguistics gave a bibliography to the students...'

a. ... ke ton Chomsky *ton* vrikan poli diskolo (CLLD)
and the Chomsky-acc cl-him found-3pl very difficult

b.... * ke *ton* vrikan ton Chomsky poli diskolo (Clitic Doubling)
and cl-him found-3pl the Chomsky very difficult

c... ? ke ton Chomksky vrikan poly diskolo (Topicalization)
and the Chomky-acc found-3pl very difficult

(example from Anagnostopoulou 1994, ex 13)

As Alexopoulou & Kolliakou (2002) observe, only (57a), where the NP is CLLD-ed constitutes a felicitous follow up for the context provided. Example (57b) is an instance of clitic doubling, where the NP is not left dislocated, but only clitic duplicated, is not a felicitous follow up; the same is true for (57c), an instance of Topicalization, where *ton Chomsky* is left dislocated, but not clitic doubled. In the context of (57a) the NP *ton Chomsky* is a subselectional link (Hendriks and Dekker 1996), since it picks its referent from a salient discourse set, the set of linguists included in the bibliography given to the students. Based on that, Alexopoulou & Kolliakou (2002) argue that the infelicity of clitic doubling and Topicalization in (57)

supports the generalization that links in Greek are realized exclusively through CLLD, not clitic doubling or Topicalization.

To answer the question why preverbal objects are strongly preferred clitic doubled, I argue based on the above discussion - the difference between Topics and CLLD-ed NPs (Alexopoupou & Kolliakou 2002) - that ground NPs on the left periphery can be associated with links only if doubled; this is a discourse requirement that makes their occurrence almost obligatory. Conversely, doubled objects function as links only when preverbal. The following example illustrates further the difference between Topicalization and CLLD.

(58) i fitites tu panepistimiu mas exun poli kales epidosis
The students of our university are of a high calibre'
Mia didaktoriki diatrivi *(tin) protinan gia to vravio kaliteris diatrivis...
A doctorate thesis-acc it-cl suggested-3pl for the prize best PhD thesis-gen
They recommended a PhD thesis for the prize of best thesis...'
(example from Alexopoulou & Kolliakou 2002)

In (58) the presence of the clitic is obligatory. It doubles the NP that selects a member of the (implicit discourse referent, the set of PhD theses submitted by the students of our university (antecedent referent).

5.4.2 Syntactic Underdeterminacy and Non-Monotone Anaphora

The function of CLLD-ed NPs as links provides further evidence for validating the underdeterminacy hypothesis with respect to the distribution of ground information. Looking again at the examples in (55) repeated in (59) below, we observe what was stated above, namely that all the orderings in (59b-e) can successfully answer the context question in (59a).

(59) a. ke tin tileorasi pjos tin agorase;
and the television who it-cl bought-3sg?
'And the television? Who bought it?

b. [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin agorasan tin tileorasi]$_{\mathbf{TAIL}}$ **S**clVO
the parents-in-law-nom it-cl bought-3sg the television-acc
'The parents-in-law bought the television'

c. [tin tileorasi]$_{\mathbf{LINK}}$ tin agorasan [$_{\mathbf{F}}$ ta **PETHERIKA**] OclV**S**
the television-acc it-cl bought-3sg the parents-in-law-nom
'The parents-in-law bought the television'.

d. [tin tileorasi]$_{\mathbf{LINK}}$ [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin agorasan]$_{\mathbf{TAIL}}$ O**S**clV
the television-acc the parents-in-law-nom it-cl bought-3sg
'The parents-in-law bought the television'.

e. [tin agorasan]$_{\mathbf{CT}}$ [$_{\mathbf{F}}$ ta **PETHERIKA**] [tin tileorasi]$_{\mathbf{TAIL}}$ clV**S**O
it-cl bought-3sg the parents-in-law-nom the television-acc
'The parents-in-law bought the television'

Although at first sight it seems that the choices are interchangeable, the choice of each of these orders by speakers achieves different effects vis-à-vis their contexts (cf. the discussion on (55)); each order implies different information with respect to the organization of discourse. In reality, the most natural answer is (59b). This is because this option straightforwardly and effortlessly (in terms of processing) answers the wh-question. The focused NP is preposed and the ground material is in the tail. Actually, the ground material (being prosodically de-accented) could be easily omitted. At a first sight, any other option (except (59b)) seems artificial or contrived. The duplication of any material already mentioned or any other syntactic arrangement seems redundant. This is easily shown by the following example in (60):

(60) Pios katharise to spiti?
'Who cleaned the house?'
a. [$_{\mathbf{F}}$ i **MITERA**]
the mother-nom
b. [to spiti *(to) katharise]$_{\mathbf{LINK}}$ [$_{\mathbf{F}}$ i **MITERA**]
the house cl-it cleaned-3sg the mother-nom
'The house, the **mother** cleaned it'

The answer in (60b), although fully acceptable, is completely unnatural. However, it is possible, and what is more complicated is that, if chosen, it needs to appear in a CLLD-ed configuration (Tsiplakou 1998, Alexopoulou 1999). Hence, the question is: how can we account for the presence of the alternative answer (60b) as an interpretationally equal answer to the question in (60a), given its 'unnatural' character?

I argue that the answers in (59) and (60) denote different things about the context in which they are uttered. This will be shown through the hypothesis of 'non-monotone anaphora' (Hendriks & Dekker 1996) adapted from Alexopoulou & Kolliakou (2002).

Recall from Section 5.2.2 the example in (15b), which is an instance of link-focus partition. Alexopoulou & Kolliakou (2002) argue that Vallduvían links or discourse topics can be considered cases of non-monotone (sub-selectional) anaphora.[179]/[180] Consider for example, the link in (15b), repeated here in (61).

(61) Tell me about the people in the White House. Anything I should know?
The *president* [$_{\mathbf{F}}$ hates **CHOCOLATE**]. (link-focus)

The *president* is a non-monotone anaphoric expression picking an individual from a salient set in the discourse, the set denoting the *people in the White House*. On a par with non-monotone anaphoric elements, it bears B Accent (Vallduví 1992). Cases of an explicit contrast are available as well, as shown in (62).

(62) (a) Where can I find the cutlery?
(b) The **forks** are in the cupboard but the **knives** I left in the drawer.
(Engdahl & Vallduví 1994)

[179] They argue that by analysing Greek CLLD phrases as links in the Hendriks & Dekker, rather than the Vallduvían sense, the intuition that such NPs are `given' or `discourse-linked' finds a formal explanation within a general framework of discourse anaphora (DRT).

[180] Alexopoulou & Kolliakou (2002) present further evidence showing that CLLD-ed NPs in Greek are always non-monotone anaphoric elements, picking their referent from a salient discourse set. They argue that CLLD-ed NPs in Greek take wide scope in contexts with quantifiers *'kathe'* (each) and *'kathe'* (every). Additional evidence comes from the linkhood attribute of CLLDed NPs with predicates such as *'psaxno'* (to look for, seek). Finally, evidence for the fact that only CLLDed NPs take wide scope comes from contexts with plurals having a numeral determiner.

Vallduví''s definition of linkhood developed in terms of 'current locus of information update' (cf. section 5.2.2) cannot account for the special relationship holding between *the president* and *the people in the White House* in (61), or *forks* and *knives* and *the cutlery* in (62). The file-cards representing the former cannot be 'marked' as establishing a subset relationship with the file-cards representing the latter. However, Hendriks & Dekker's (1996) definition of linkhood essentially addresses this issue: expressions that are links (linkhood being structurally realized by means of B Accent in English) are required to satisfy the constraint in (63).

(63) *Hendriks & Dekker's Non-Monotone Anaphora Hypothesis:*
Linkhood (marked by B Accent in English) serves to signal non-monotone anaphora. If an expression is a link, then its discourse referent Y is anaphoric to an antecedent discourse referent X, such that X\Y.

According to the above, X (the antecedent set) should *not* be a subset of or equal to Y (the set corresponding to the link). This accounts for the links in (61) and (62). In these cases the set the link picks out is a proper subset of the antecedent set.

Following the above hypothesis, we can account for the examples in (59) and (60b) by arguing that they underdetermine the information structure partitions because they violate Hendriks & Dekker's non-monotone anaphora hypothesis: the CLLD-ed NPs in examples (59) and (60) are *not* non-monotonically related to their antecedent, because their antecedent discourse referent X is equal to the discourse referent Y of the links, contrary to what (63) states. This is why they are not natural responses. By contrast, when the question introduces a set, a member of which is picked by the CLLD-ed NP in the answer, then these examples become fully natural. This is illustrated below:

(64) Ti sinevi me ta pedia?
'What happened to the kids?'
a. [$_{F}$ *Ta* sinelave i **ASTINOMIA**]
neut-3pl-acc arrested-3sg the police-nom
'The police arrested them.'
b.[Ton Petro]$_{LINK}$ **ton** sinelave [$_{F}$ i **ASTINOMIA**] (ya tus alus den ksero).
the Pertos-acc him-cl arrested-3sg the police-nom for the others not know/1sg
`The police arrested Petros (as for the others, I don't know).'

(65) Pios ide ta pedia?
'Who saw the kids?'
a. [$_{F}$ o **PETROS**]
the Petros-nom
'Petros did.'
b. [To Yani]$_{LINK}$ **ton** ide [$_{F}$ o **PETROS**] (ya tus alus den ksero)
the Yanis-acc cl-him saw-3sg the Petros for the others not know-1sg
'Petros saw Yanis (I don't know about the others).'

That is, when the speaker chooses to answer the questions in (64) and (65) using the link option, the CLLD-ed NPs in (64b) and (65b) s/he probably has a different antecedent context set in mind: a different antecedent discourse set to which the CLLD-ed NP is a member. In other words, when the speaker chooses the link option in (59) and (60)), she performs a strategy by which s/he assumes that the answer picks a member set which is not directly introduced by the immediate question but –as follows by the constraint of non-monotone anaphora- by a 'super-set' question (the antecedent question) to which the discourse referent is the link.

The above strategy explains why in (56) the occurrence of a 'super-set' question advances topic-marking and constraints the options available (contrary to the set in (59) and (60)). Building on the discussion in section 5.4.1.4., in (56) the 'super-set' context question *and who bought all the electrical devices?* introduces the existence of a set of electrical devices and it seeks to identify the individual who bought the devices. The acceptable options in (56b, c) introduce a member of the set picked and expressed by the CLLD-ed NP in the answer. In this respect, the options in (56b, c) function as subselectional links, in the sense that they pick out an appropriate

subset of a salient set. According to Alexopoulou & Kolliakou (2002) CLLD elements in Greek take wide scope and pick out a referent from a salient discourse set – a generalization that can be captured by assigning to those NPS the status of non-monotone anaphoric elements or subselectional links. On the contrary, the unacceptable options in (56a, d, f and g) do not perform this fuction due to the fact that they do not constitute link-focus-tail or link-tail-focus instructions. The object *tin tileorasi* is not CLLD-ed but is rather found in right dislocated position. As such, it cannot function as a subselectional link.

Thus, I argue that the restriction on non-monotone anaphora not only justifies the linkhood of CLLD-ed elements and as a result of the obligatory presence of doubling in the preverbal position but also constraints the underdeterminacy hypothesis in the following ways: (a) first, by ruling out CLLD-ed elements as answers to context questions that do not presuppose a salient discourse set (cf. (59)-(60)), (b) it prohibits CLLD-ed elements from functioning as tails; but only as links.

Anticipating the discussion to follow, in this chapter, I argue that word order does not directly constrain the realization of focus. The distribution of focus is free, as argued in Chapter 4. The occurrence of focus is independent of the focus-ground partition of the sentence, since it is determined by prosody. What word order seems to regulate is the realization of ground information. We saw already that the syntactic constraints imposed in (30a) are constraints that involve the distribution of ground material. In particular, we saw that: (i) ground elements (CLLD and CLRD) should be peripheral, (ii) doubled elements are ground information, (iii) preverbal ground NPs have to be doubled (under the notion of linkhood as defined by non-monotone anaphora), (iv) linkhood constrains syntactic underdeterminacy. This analysis of links is incorporated within a system assuming that information structure in Greek arises from interface constraints; in particular, linkhood relies on the simultaneous co-operation of phonology (absence of stress), syntax (left dislocation) and morphology (doubling of objects).

5.5 The S-IS Underdeterminacy Hypothesis Revisited

Having discussed in the previous sections (5.4.1-5.4.2) the role of the different information structure constraints and how they organize the information structure of

the utterance, we return in this section to reassess the S-IS underdeterminacy hypothesis alongside word order variation in Greek. This task will also allow us to evaluate the relevant prominence of the structural resources – phonological and/or syntactic – which constraint information structure. Recall that the underdeterminacy hypothesis is twofold: it stipulates that one word order can realize distinct information structure partition and it also states that a certain interpretation can be realized by a number of word orders. In this section, I will attempt to assess whether a certain information structure partition can be expressed by distinct word orders.

Figure 1 below presents schematically the S-IS underdeterminacy hypothesis. It shows that one word order can be part of a set of options on the interaction between syntax and prosody but the same word order is also part of a set where other syntactic options can realize the same information structure (e.g., subject focus).[181] For instance, IS6 is part of the focus set of the SVO word order but it also happens to be part of a set of ordering possibilities that realize subject focus.

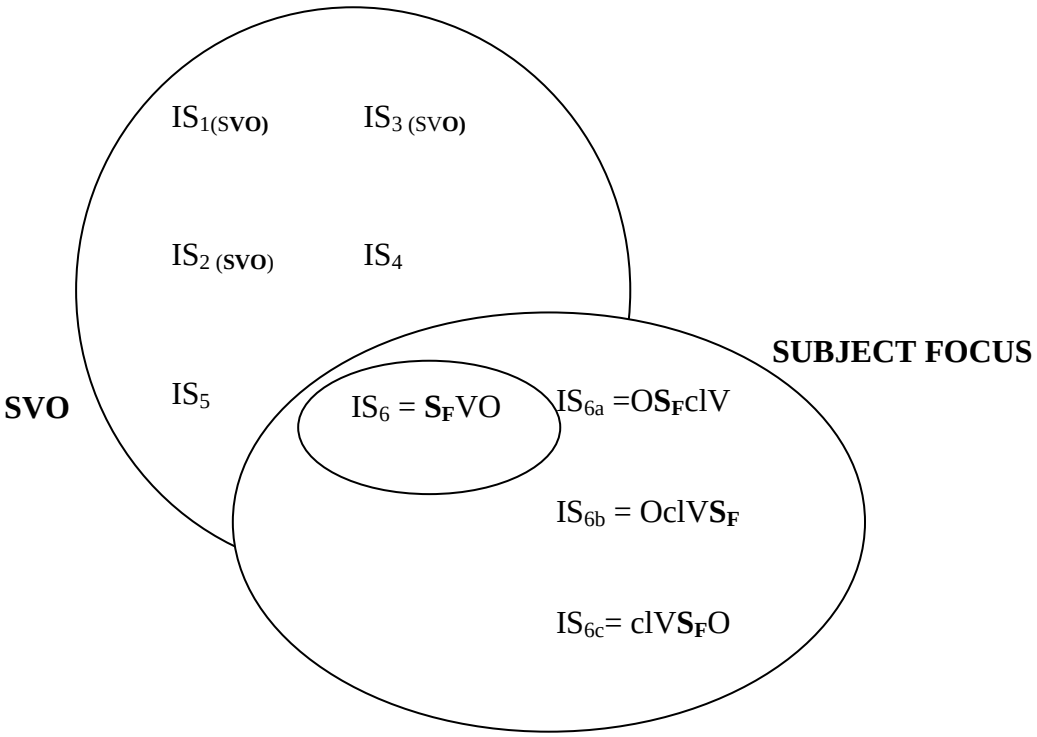


Figure 1: The S-IS mapping of word orders in Greek

[181] On the top circle the different numberings (1, 2, 3, 4, 5, and 6) represent the different Information structure partitions which result from different stress assignments. On the other hand the bottom circle shows that one of the Information structurepartitions of the top circle, for instance, $IS_6 = S_FVO$, that is subject focus, can be part of a set where other IS partitions can realize the same context, namely subject focus.

We will look at three focusing contexts: subject focus, verb focus, object focus. The relevant data are presented in (9-11) (The symbol ✓ is for grammaticality/acceptability, the symbol **?** indicates infelicity (or reduced preference), the symbol **??** indicates greater infelicity and the asterisk ***** indicates unacceptability). Departing from the assumption that more than one option is available for a given context, we examine the S-IS underdeterminacy hypothesis against the onformation structure constraints in (66). We expect that the (un-) acceptability of certain orders will be due to the violation of the constraints in (66). Certain structures will violate more than one of these constraints.

First, I will examine the interaction of the contribution of context, word order, accent placement in the realization of information structure and then I will also consider the interaction of clitic doubling in the same orders.[182]

[182] The illustration that will be offered in this section is not entirely exhaustive; for instance, null focus contexts and all focus contexts are not examined. It also does not involve a detailed constraint ranking. It is more indicative of the points that it needs to substantiate and the presentation of the relevant points that confirm or disconfirm the S-IS underdeterminacy hypothesis. For instance, it does rank structures which obviously violate a certain constraint. An exhaustive analysis will involve an approach which would infer the ranking of the different constraints based on their evaluation with respect to the data. Such ranking would lead to conclusions about the superiority of a component over the other. Such an exhaustive analysis is probably the work of an OT-based framework such as that in Alexopoulou & Keller (2001), and is beyond the scope of the present thesis. The explanation behind that is probably the following: what this discussion will show is that we are not talking about constraint ranking or number of constraints to acceptability but rather the fact that different 'contextualized' readings prefer different constraints. So, it might not be a matter of constraint ranking or number of constraints with respect to acceptability. However, this remark requires further research.

(66) INFORMATION STRUCTURE CONSTRAINTS (GREEK)

A. Syntactic constraints:

a. ***WORD ORDER***: ground constituents have to be peripheral.

b. ***OBJECT DOUBLING***: clitic-doubled objects have to be interpreted as ground.

c. ***VERB FINAL*:** the verb must not be right-peripheral.[183]

d. ***PREVERBAL DOUBLING***: preverbal objects have to be clitic-doubled

B. Phonological constraints:

e. ***ACCENT FOCUS:*** accent falls on with the focused constituent (or part of the focus)

f. ***GROUND***: given or ground elements cannot carry accent

g. ***ACCENT FINAL***: in broad focus, accent has to fall on the rightmost constituent.

Based on the discussion in section 5.3 two more syntactic constraints have been added: the VERB FINAL constraint which penalizes verb final structures and the PREVERBAL DOUBLING which requires that preverbal objects must be clitic-doubled; both constraints are imposed on word order. The phonological constraints Domain and Focus have been modified into ACCENT FINAL and ACCENT FOCUS respectively and the syntactic constraint Clitic doubling into OBJECT DOUBLING.

WORD ORDER and OBJECT DOUBLING impose restrictions on the syntactic/morphological realization of information structure. The association of doubled NPs with a ground interpretation is captured by OBJECT DOUBLING. On the other hand WORD ORDER encodes the restriction that ground NPs should appear either to the left or right periphery of the clause. I use the term 'periphery' descriptively, to

[183] The verb final constraint appears relaxed when the preverbal object is clitic doubled. Although verb final structures are not the most natural replies in argument focus contexts when they occur with a clitic double argument their acceptability increases. The effect of the verb final constraint is stronger when the object is not clitic doubled. Samek-Lodovici (p.c.) points out quite rightly that the V can be final and it does not violate VERB FINAL when the subject is a contrastive topic, as in the underlined clause in the QA-pair below:
Q: What did everybody do? A: I don't know about the others, but $\underline{John_{CT}\ swam_{F}}$.
It seems to me that one way to deal with this is to relax the requirement of the VERB FINAL constraint probably in the following way: verbs are not preferred in right peripheral peripheral positions. In any case, the effect of the VERB FINAL constraint is much weaker than the effects of other constraints, such as PREVERBAL DOUBLING, as we will see. Moreover, the acceptability of verb final structures increases considerably when PREVERBAL DOUBLING is not violated and also if more material is added after the verb, as discussed in section 5.3.

refer to clause initial and clause final NPs. For our purposes, any clause initial or clause final NP is considered peripheral (even if it would correspond to an *in-situ* constituent in standard syntactic analyses). It is further worth pointing out that this restriction is not biconditional; peripheral NPs do not necessarily belong to the ground part of the sentence. Finally, I interpret WORD ORDER as a requirement that *all* ground NPs are peripheral. This point will become more relevant in the analysis of V focus, a context that involves two ground NPs.

While WORD ORDER and OBJECT DOUBLING encode syntactic/morphological restrictions on ground elements, ACCENT FOCUS and ACCENT FINAL are phonological constraints on the realization of focused NPs. ACCENT FOCUS associates an accented constituent with a focus interpretation. It applies to all information structures, i.e., both in narrow and broad focus contexts. Moreover, ACCENT FOCUS is insensitive to other structural properties of the relevant constituent (e.g., whether the constituent is an NP or not, whether it appears preverbally or postverbally). In contrast to this, ACCENT FINAL is only relevant for broad focus, and moreover, it associates accent placement with clause structure (the right clause boundary).

In the structures below in (64), first the focused constituent occupies the clause initial position, second, the clause-medial and third, the clause final position. Recall that the distribution of focus can be free (as proposed in Chapter 4). The reason for this is to reflect the domains of focus assignment as organized by the S-P mapping proposed in Chapter 4.

(67) **SUBJECT FOCUS**

Pjos afkise ti forologia?
Who-nom raise-3sg/PS the taxes-acc
'Who raised the taxes?'

a. [$_{F}$ i **KIVERNISI**] [afksise ti forologia]$_{TAIL}$ ✓**S**VO
the government-nom raise-3sg/PS the taxes-acc
'The **government** raised the taxes'

b. [$_{F}$ i **KIVERNISI**] [ti forologia afksise]$_{TAIL}$??**S**OV
the government-nom the taxes-acc raise-3sg/PS

c. [afksise]$_{LINK}$ [$_{F}$ i **KIVERNISI**] [ti forologia]$_{TAIL}$ ✓V**S**O
raise-3sg/PS the government-nom the taxes-acc

d. [ti forologia]$_{LINK}$ [$_{F}$ i **KIVERNISI**] [afksise]$_{TAIL}$??O**S**V
the taxes-acc the government-nom raise-3sg/PS

e. [ti forologia]$_{LINK}$ [afksise]$_{TAIL}$ [$_{F}$ i **KIVERNISI**] ?OV**S**
the taxes-acc raise-3sg/PS the government-nom

f. [afkise]$_{LINK}$ [ti forologia]$_{TAIL}$ [$_{F}$ i **KIVERNISI**] *VO**S**
raise-3sg/PS the taxes-acc the government-nom

The most acceptable order is (67a), where the focused subject is found in initial position and the rest of the sentence is in the tail, realizing a focus-tail instruction. Answer (67b) is not felicitous because although the difference appears only in the tail the object comes before the verb and violates PREVERBAL DOUBLING because is not clitic doubled and remains part of the tail. Moreover, the positioning of the verb in final position violates the VERB FINAL constraint. **S**OV also violates WORD ORDER, and is therefore predicted to be less acceptable than O**S**V (both orders also violate VERB FINAL and PREVERBAL DOUBLING, and hence should be generally low in acceptability). However, if the preverbal object was clitic-doubled then the structure would become more acceptable, as we will see in the next section. Hence, the violation of PREVERBAL DOUBLING is more fatal for the acceptability of the structure in (67b) than the VERB FINAL constraint.

The infelicity of O**S**V in terms of violating the VERB FINAL constraint could receive the following explanation: Topicalisation in Greek is invariably marked via

clitics, as argued in section 5.4, while ground dislocation (left dislocation) is a preferred option when the subject and the verb as well are meant as new information:

(68) a. That damn math problem was very difficult;

b. [ti lisi] [$_{\mathbf{F}}$ vrike mono o **ARIS**], na fandastis...

the solution-acc found-3sg only the Ares-nom, imagine-2sg

'Just think that the solution only **Ares** found!'

(example from Kechagias 2011:298)

However, this explanation might only be a stipulation and it is certain that the conditions of verb final structures require further research.

Example (67c) is acceptable (although less so than example (67a)); the focused element receives the stress in the clause-medial position, the verb is in the clause-initial position and the object in clause-final position. In example (67d) the verb is in the final position and the structure violates the VERB FINAL constraint. Also, the unacceptability increases because the structure violates PREVERBAL DOUBLING, similarly to (67b). The object is part of the ground and if realized in the link position it should be doubled (cf. Section 5.4.1.4). The structure in (67e) is better because although it violates the PREVERBAL DOUBLING constraint, the subject is focused in the final position and the verb is not in the tail; it does not violate the VERB-FINAL constraint. Actually, we should expect higher acceptability from this order. This order is supposed to reflect the mirror image of an SVO order; however, the requirement that the PREVERBAL DOUBLING constraint imposes is quite strong and results in the reduced acceptability of this order. The last example (67f) is quite controversial. Most authors (Georgiafentis 2001, 2003; Philippaki-Warbuton 2001; Alexiadou 1997, 1999, Haidou 2000; Sifaki 2003, Roussou & Tsimpli 2006) acknowledge the structure in (67f) as a legitimate structure with focus on the subject. In fact, certain authors present this structure as a counterargument to the requirement for adjacency between the focused constituent and the verb. Others argue that the reduced acceptability may be due the fact that the discourse anaphoric 'old' object has to escape from the VP-internal position to the left periphery (cf the discussion in Chapter 2: 2.2.1). Despite the above, the unacceptability of (67f) is higher than that in (67e), although the subject is final in both positions.

Anticipating the discussion to follow in section 5.7, I argue that the unacceptability pattern of this order in comparison to the other unacceptable orders has to do with a violation of the Focus Interpretation Principle (Chapter 4, Section 4.1). In all the above structures, their unacceptability is the result of the violation of syntactic constraints (WORD ORDER, VERB FINAL, PREVERBAL DOUBLING etc.). Their unacceptability is not the result of any interpretational effect; the focused constituent always receives the stress and no phonological constraint is violated. In (67f) the ungrammaticality results from the fact that the focused subject may receive the main stress of the sentence but it cannot be sustained as an answer to a subject focus context. In other words, stress on the final constituent in this order is not related with narrow argument focus. Rather, accent on the final constituent is related with a broad focus interpretation only. Therefore, it violates the ACCENT FOCUS constrain on phonology but satisfies the ACCENT FINAL constaint. This focus context along with VS**O** is developed in section 5.7. Moreover, VO**S** violates WORD ORDER, as the object is non-peripheral, and is thus predicted to be less acceptable than **S**VO, OV**S**, and V**S**O, which all satisfy WORD ORDER.

Let us now look at the context of object focus.

(69) **OBJECT FOCUS**

Ti afkise i kivernisi?

What raise-3sg/PS the government-nom?

'What did the government do?'

a. [$_{F}$ ti **FOROLOGIA**] [afksise i kivernisi]$_{TAIL}$ ✓***O***VS
the taxes-acc raise-3sg/PS the government-nom
'The government raised the **taxes**'

b. [$_{F}$ ti **FOROLOGIA**] **[**i kivernisi afksise]$_{TAIL}$?? ***O***SV
the taxes-acc the government-nom raise-3sg/PS

c. [i kivernisi]$_{LINK}$ [$_{F}$ ti **FOROLOGIA**] [afksise]$_{TAIL}$? S***O***V
the government-nom the taxes-acc raise-3sg

d. [afksise]$_{LINK}$ [$_{F}$ ti **FOROLOGIA**] [i kivernisi]$_{TAIL}$ ✓V***O***S
raise-3sg/PS the taxes-acc the government-nom

e. [i kivernisi]$_{LINK}$ [afksise]$_{TAIL}$ [$_{F}$ ti **FOROLOGIA**] ✓SV***O***
the government-nom raise-3sg/PS the taxes-acc

f. [afksise]$_{LINK}$ [i kivernisi]$_{TAIL}$ [$_{F}$ ti **FOROLOGIA**] * VS***O***
raise-3sg/PS the government-nom the taxes-acc

In the object focus examples we find that the range of acceptable options is higher than in the case of subject focus in (67). This is attributed mainly to the articulation of the object as the focused information. Note that the most crucial of the syntactic information structure constraints in (30) involve the distribution and interpretation of object. Now, once the object is focused the syntactic restrictions are expected to be 'relaxed'. This is to be expected, as anticipated in Section 5.4.2. It becomes obvious that the main role of word order in the focus-ground partition is to regulate the ground information rather than the focused part (compatible with the syntactic information structure constraints). In effect, most of the above orders are acceptable. Crucially, we expect example (69e), the SVO structure, to be the most natural answer since it also the least 'marked' in terms of the S-P interface; no constraints are violated under this option. Similary, OVS, the structure in (69a), which realizes a focus-tail instruction, reflects the mirror image of the SVO in (69e) and is actually equally acceptable. The structure in (69b) is also acceptable; however, there are reservations as to what contextual requirements would allow a native speaker to 'opt' for such an order,

which violates the VERB FINAL constraint. The most suitable context would probably be a 'correction' context or a 'contrastive' context. Thus, the requirements there are extra-linguistic or meta-linguistic functions. **O**SV also incurs a violation of WORD ORDER, since the subject is not peripheral, and hence should be less acceptable than SOV (both orders also violate VERB FINAL), as illustrated in the double question mark (??) indicating greater infelicity.

Examples (69d) and (69e) are also felicitous answers in the context question in (69); however, according to my judgements they would be preferred as structures of a longer discourse or embedded in an extended conversation about *government* and *taxation*. Note that VOS could also be understood as an all-focus instruction, if the discussion is about 'what did you hear on the news?'. With respect to the final option (69f), I argue - similarly to the VOS shown in (67f) - that this order also violates the ACCENT FOCUS constraint. Again, the focused constituent receives the stress; however, it is not a felicitous answer to an object focus question. It is a rather felicitous answer to an all-focus question. Accent on the most embedded constituent in VSO is compatible with an all-focus but not with an object focus interpretation (contraty to previous literature in Greek: Tsimpli 1990, 1995, Alexiadou 1999, Tsiplakou 1998, Alexopoulou 1999, Philippaki-Warbuton 1981, among others).

To conclude, VS**O** similarly to VO**S** satisfies the ACCENT FINAL constraint but violates the ACCENT FOCUS constraint. An alternative account for these orders will be proposed in Section 5.7. Moreover, in the object focus context, the object is in focus, while the subject is part of ground. This means that WORD ORDER is violated in VS**O**, where the subject is nonperipheral. Hence VSO should be dispreferred compared to SVO, OVS, and VOS, which satisfy WORD ORDER.

In what follows, we turn to the context of verb focus and provide the options available.

(70) **VERB FOCUS**

Ti ekane i kivernisi me ti forologia?
What did-3sg the government-nom with the taxes-acc?
'What did the government do with the taxes?'

a. [$_{\mathbf{F}}$ **AFKSISE**] [i kivernisi ti forologia]$_{\mathbf{TAIL}}$?***V***SO
raise-3sg/PS the government-nom the taxes-acc
'The government **raised** the taxes'

b. [$_{\mathbf{F}}$ **AFKSISE**] [ti forologia i kivernisi]$_{\mathbf{TAIL}}$?***V***OS
raise-3sg/PS the taxes-acc the government-nom

c. [i kivernisi]$_{\mathbf{LINK}}$ [$_{\mathbf{F}}$ **AFKSISE**] [ti forologia]$_{\mathbf{TAIL}}$ ✓S***V***O
the government-nom raise-3sg/PS the taxes-acc

d. [ti forologia]$_{\mathbf{LINK}}$ [$_{\mathbf{F}}$ **AFKSISE**] [i kivernisi]$_{\mathbf{TAIL}}$??O***V***S
the taxes-acc raise-3sg/PS the government-nom

e. [ti forologia]$_{\mathbf{LINK}}$ [i kivernisi]$_{\mathbf{TAIL}}$ [$_{\mathbf{F}}$ **AFKSISE**] *OS***V**
the taxes-acc the government-nom raise-3sg/PS

f. [i kivernisi]$_{\mathbf{LINK}}$ [ti forologia]$_{\mathbf{TAIL}}$ [$_{\mathbf{F}}$ **AFKSISE**] *SO***V**
the government-nom the taxes-acc raise-3sg/PS

The V-initial orders in (70a) and (70b) in which the verb is the focused constituent are acceptable but more marked than the structure in (70c). Both (70a) and (70b) instantiate a focus-tail instruction, where in both, the verb is in focus and the rest of the sentence (subject and the object) is in the tail. However, they violate the WORD ORDER constraint, because both NPs have to be peripheral and not just one, and as such they are expected to be less acceptable than (70c). The order in (70c) is the most informationally unmarked, realizing a link-focus-tail partition of the sentence, where the verb occupies the clause-medial position and does not violate any constraints. Anticipating the discussion to follow, we can argue that what has been obvious in all the three focus structures (subject, object, verb focus) is that a particular syntactic ordering, that is a canonical, non-scrambled constituent structure seems to be essential in realizing an unmarked information structure partition in accordance with section 5.3. The structure in (70d), which is the reverse of (70c), is not acceptable mainly because it violates the PREVERBAL DOUBLING constraint. It seems more natural to

stress the verb when the material in the *link* is doubled. This can also be argued for (70a); this order would be a more acceptable answer to the question in (70), if the object was clitic-doubled. The structure in (70d) also violates WORD ORDER similarly to (70a) and (70b), however, although they are all predicted to have reduced acceptability compated to SVO, OVS is worse due to the WORD ORDER violation.

The final structures with the verb stressed in the final order are the most inappropriate in the context question in (70). The two final orders, SOV and OSV should be the least acceptable: unlike VSO, VOS, and OVS, they violate three constraints (VERB FINAL, PREVERBAL DOUBLING and WORD ORDER).This is because the ground material before the verb cannot constitute a proper topic/link structure. Based on section 5.4.1.2 we would expect prefocal material to have a flexible distribution, i.e. to be interchangeable between links and tails. On the contrary, post-focal materials are expected to be tail material. The pre-focal OS and SO orders found in (70e) and (70f) respectively cannot be links because no part of their ground information satisfies the PREVERBAL DOUBLING constraint and they both violate the VERB FINAL constraint.

The (un-) acceptability results of the interaction of context, word order, and accent placement are summarized below in Table 1. In the infelicitous and unacceptable structures on the table, I only illustrate the constraints that are violated and result in the infelicity or ungrammaticality and not those that are satisfied.

TABLE 1: THE INTERACTION OF CONTEXT, ACCENT PLACEMENT AND WORD ORDER			
CONTEXT	**SUBJECT FOCUS**	**OBJECT FOCUS**	**VERB FOCUS**
CLAUSE-INITIAL	✓**S$_F$**VO	✓**O$_F$**VS	**? V$_F$**SO WORD ORDER
CLAUSE-INITIAL	**?? S$_F$**OV PREVERBAL DOUBLING VERB FINAL WORD ORDER	**?? O$_F$**SV VERB FINAL WORD ORDER	**?V$_F$**OS WORD ORDER
CLAUSE-MEDIAL	✓V**S$_F$**O	✓V**O$_F$**S	✓S**V$_F$**O
CLAUSE-MEDIAL	**??** O**S$_F$**V PREVERBAL DOUBLING VERB FINAL	**?**S**O$_F$**V VERB FINAL	?? O**V$_F$**S PREVERBAL DOUBLING
CLAUSE-FINAL	**?** OV**S$_F$** PREVERBAL DOUBLING	✓SV**O$_F$**	*SO**V$_F$** PREVERBAL DOUBLING VERB FINAL WORD ORDER
CLAUSE-FINAL	* VO**S$_F$** ACCENT FOCUS WORD ORDER	*VS**O$_F$** ACCENT FOCUS WORD ORDER	*OS**V$_F$** PREVERBAL DOUBLING VERB FINAL WORD ORDER

We can observe the following in Table 1:

V-initial orders are generally acceptable in most contexts. However, VO**S$_F$** and VS**O$_F$** with stress falling on the most embedded constituent are not compatible with subject and object focus readings respectively; therefore they violate the ACCENT FOCUS constraint. However, final stress is compatible with an all-focus reading or broad

focus reading, thus, these orders satisfy the ACCENT FINAL constraint, being compatible with a broad focus interpretation or context. Given that, the respective contexts are acceptable when VS**O$_F$** turns into its counterpart, SV**O$_F$**, and VO**S$_F$** turns into **S$_F$**VO respectively. It seems that the order SVO is the least marked orde allowing for a number of focusing possibilities.

V-final orders are not acceptable in accordance with the constraint VERB FINAL, such as **S$_F$**OV, O**S$_F$**V, **O$_F$**SV, S**O$_F$**V, SO**V$_F$** and OS**V$_F$**. Among these orders, the orders with object focus are infelicitous resulting in violation of the VERB FINAL constraint, as well as the WORD ORDER constraint. However, the remaining orders in subject focus and verb focus contexts have more dramatic effects since they also violate the PREVERBAL DOUBLING constraint. It seems that the PREVERBAL DOUBLING constraint is more crucial than the VERB FINAL constraint. In the next section we will see that once the object is CLLD-ed the VERB FINAL constraint is relaxed.

Object initial orders are not acceptable (unless focused) because they violate the PREVERBAL DOUBLING constraint on word order in both verb and subject focus contexts, e.g. O**V**S and O**S**V. Finally, the constraint GROUND is satisfied vacuously in all the orders; ground materials do not carry the accent and the constraint ACCENT FINAL is not relevant since we do not test a null focus context or an all-focus context. ACCENT FINAL is relevant in VO**S** and VS**O** structures, as already mentioned, since these structures violate the ACCENT FOCUS constraint. The OBJECT DOUBLING is also no relevant since the effects of clitic doubling were not attested in these structures. We will see them in the next section.

So far and overall it seems that the violation of the PREVERBAL DOUBLING constraint incurs serious infelicity and is a crucial constraint. Similarly, violations of the ACCENT FOCUS constraint result in ungrammaticality. The WORD ORDER constraint does not incur ungrammaticality but rather infelicitous outcomes.

With respect to the substantiation of the S-IS underdeterminacy hypothesis we see that in object, subject and verb focus contexts, the S-IS mapping underdetermines focus interpretation in a many-to-one fashion. However, the constraints imposed by phonology (accent focus, ground), syntax (word order, verb final) and morphosyntax (preverbal doubling, object doubling) constrain the permissible options in a given context. Some orders are more acceptable than others due to the violation of a small number of constraints. The order which is acceptable in all contexts is the SVO order; it does not violate any constraints.

In what follows, I will test the interaction between word order, accent placement, context and object doubling in subject, object and verb focus contexts alongside the S-IS underdeterminacy hypothesis.

5.5.1 Object Doubling and Underdeterminacy

The discussion so far has strongly supported the view that besides accent, clitic doubling is a strong indicator that constrains even further the realization of information structure in Greek.

Let us first look at the case of subject context in which the object has been clitic doubled.

(71) **SUBJECT FOCUS**

Pjos afkise ti forologia?
Who-nom raise-3sg/PS the taxes-acc
'Who raised the taxes?'

a. [$_{F}$ i **KIVERNISI**] [tin afksise ti forologia]$_{TAIL}$ ✓**S**clVO
the government-nom cl-it raise-3sg/PS the taxes-acc
'The **government** raised the taxes'

b. [$_{F}$ i **KIVERNISI**] [ti forologia tin afksise]$_{TAIL}$?**S**OclV
the government-nom the taxes-acc cl-it raise-3sg/PS

c. [tin afksise]$_{LINK}$ [$_{F}$ i **KIVERNISI**] [ti forologia]$_{TAIL}$ ✓clV**S**O
cl-it raise-3sg/PS the government-nom the taxes-acc

d. [ti forologia]$_{LINK}$ [$_{F}$ i **KIVERNISI**] [tin afksise]$_{TAIL}$?O**S**clV
the taxes-acc the government-nom cl-it raise-3sg/PS

e. [ti forologia]$_{LINK}$ [tin afksise]$_{TAIL}$ [$_{F}$ i **KIVERNISI**] ?OclV**S**
the taxes-acc cl-it raise-3sg/PS the government-nom

f. [tin afkise]$_{LINK}$ [ti forologia]$_{TAIL}$ [$_{F}$ i **KIVERNISI**] ✓clVO**S**
cl-it raise-3sg/PS the taxes-acc the government-nom

In the case of a subject focus context, as in (71), the answer in (71a) is perfectly acceptable with object doubling, equally as in the case without object doubling in

(67a). It seems that it does not really matter when ground material is found in the tail whether they are doubled or not. This is the case of clitic-doubling discussed in section 5.4.1. However, the answer in (71b) is problematic because it violates the VERB FINAL constraint. Therefore, the violation of this constraint makes this structure less preferable in the context of (71). If we compare (71b) with the structure in (71d), we can see that this structure also violates the VERB FINAL constraint. Nonetheless, the structure in (71d) is preferable; although both structures respect the PREVERBAL DOUBLING constraint, the structure in (71b) incurs a violation of the WORD ORDER constraint because the object is part of the ground and it is not in peripheral position. The answer in (71c) is acceptable because the doubled object satisfies the PREVERBAL DOUBLING constraint and the focused subject satisfies the ACCENT FOCUS constraint. Also the WORD ORDER constraint is satisfied. This is further proof that the CLLD-ed structures are links and therefore acceptable in contexts when the focused subject is found in sentence medial or final position. The structure in (71e) is also acceptable. The focused subject is in the VP-internal position and the object is doubled in the tail, which is the case of a clitic doubling construction. The last structure (71f) is also acceptable compared to its cliticless counterpart in (67f).

It seems that the availability of clitic doubling improves the acceptability of this structure. Following Tsakali (2006), I assume from a syntactic point of view that clVOS is unproblematic because the double object NP is not right dislocated but rather clitic doubled, on a par with clVSO.[184] What we have here is a subject focus structure past clitic-doubling.

[184] Tsakali (2006) compares Greek with Catalan. As she points out, Greek clVOS orders contrast sharply with clVOS orders in Catalan. In this language, which also allows subjects to occur post-verbally, while the linear string clVSO is grammatical, when the postverbal subject appears in clause final position in a clVSO manner, the construction is ungrammatical. What this shows is that this language does not display genuine CD, but rather only right dislocation, as the ungrammaticality of clVOS suggests: the subject cannot occur after the right dislocated object.
In Greek, however, the situation is completely different, since clVOS is unproblematic (as clVSO is), a further indication that the doubled object is not right dislocated:
(i) δen to elise to provlima o Orestis (Greek clVOS)
not it-cl solved the problem the Orestes
'Orestes didn't solve the problem'
Kechagias (2011) offers the following syntactic analysis for clVOS: He assumes multiple specifiers, despite the fact that subjects in Greek arguably never occupy that position. This allow him to generate clVOS orders in Greek): the clitic is spelled out on the external specifier, while the moved v' node occupies the internal one: [TP clitic [T VO [T [vP]]]].

(72) **OBJECT FOCUS**

Ti afkise i kivernisi?

What raise-3sg/PS the government-nom?

'What did the government raise?'

a. [$_{F}$ ti **FOROLOGIA**] [tin afksise i kivernisi]$_{TAIL}$ *__O__clVS
the taxes-acc cl-it raise-3sg/PS the government-nom
'The government raised the **taxes**'

b. [$_{F}$ ti **FOROLOGIA**] [i kivernisi tin afksise]$_{TAIL}$ *__O__SclV
the taxes-acc the government-nom cl-it raise-3sg/PS

c. [i kivernisi]$_{LINK}$ [$_{F}$ ti **FOROLOGIA**] [tin afksise]$_{TAIL}$ *S__O__clV
the government-nom the taxes-acc cl-it raise-3sg

d. [tin afksise]$_{LINK}$ [$_{F}$ ti **FOROLOGIA**] [i kivernisi]$_{TAIL}$ *clV__O__S
cl-it raise-3sg/PS the taxes-acc the government-nom

e. [i kivernisi]$_{LINK}$ [tin afksise]$_{TAIL}$ [$_{F}$ ti **FOROLOGIA**] *****SclV__O__
the government-nom cl-it raise-3sg/PS the taxes-acc

f. [tin afksise]$_{LINK}$ [i kivernisi]$_{TAIL}$ [$_{F}$ ti **FOROLOGIA**] *clVS__O__
cl-it raise-3sg/PS the government-nom the taxes-acc

In (72) it is obvious that doubling of the focused constituent violates immediately the GROUND constraint and the OBJECT DOUBLING constraint. Ground elements cannot carry the accent. Also, accent on an element that is clitic doubled is not compatible. Clitic doubled objects are necessarily ground material. However, the ACCENT FOCUS constraint is not violated since the accent falls on the focused constituent but the fact that the focused constituent has been doubled immediately blocks its interpretation as focused. Other constraints, such as the WORD ORDER constraint and the PREVERBAL DOUBLING constraint are also satisfied but they are outranked by the violation of the GROUND constraint according to which material cannot carry the accent. Also the VERB FINAL constraint is violated in (72b) and (72c).

Let us now look at the interaction of clitic doubling with word order and accent placement in verb focus contexts.

(73) **VERB FOCUS**

Ti ekane i kivernisi me ti forologia?
What did-3sg the government-nom with the taxes-acc?
'What did the government do with the taxes?'

a. [$_{F}$ Tin **AFKSISE**] [i kivernisi ti forologia]$_{TAIL}$ ✓cl***V***SO
cl-*it raise-3sg/PS the government-nom the taxes-acc*
'The government **raised** the taxes'

b. [$_{F}$ Tin **AFKSISE**] [ti forologia i kivernisi]$_{TAIL}$?cl***V***OS
cl-it raise-3sg/PS the taxes-acc the government-nom

c. [i kivernisi]$_{LINK}$ [$_{F}$ tin **AFKSISE**] [ti forologia]$_{TAIL}$ ✓Scl***V***O
the government-nom cl-it raise-3sg/PS the taxes-acc

d. [ti forologia]$_{LINK}$ [$_{F}$ tin **AFKSISE**] [i kivernisi]$_{TAIL}$ ✓Ocl***V***S
the taxes-acc cl-it raise-3sg/PS the government-nom

e. [ti forologia]$_{LINK}$ [i kivernisi]$_{TAIL}$ [$_{F}$ tin **AFKSISE**] ?OScl***V***
the taxes-acc the government-nom cl-it raise-3sg/PS

f. [i kivernisi]$_{LINK}$ [ti forologia]$_{TAIL}$ [$_{F}$ tin **AFKSISE**] ?SOcl***V***
the government-nom the taxes-acc cl-it raise-3sg/PS

In the context of verb focus (73), the verb initial orders partition the sentence into focus and tail instructions. Both examples (73a) and (73b) are acceptable since they satisfy the WORD ORDER constraint (the subject and the object being given are in peripheral positions) and of course the ACCENT FOCUS constraint. The relative order of the given material is not really relevant, since the VERB FINAL constraint or the PREVERBAL DOUBLING constraint are not involved in these structures (there is no verb in the final position), resulting in acceptability. (73b) though, is considered less preferred/acceptable, because the object is not found in peripheral position, violating WORD ORDER. Other than that, the answer in (73c) is also acceptable. This is because the ACCENT FOCUS constraint, the WORD ORDER constraint, and the GIVEN constraint are satisfied in this structure.[185] The verb is in focus and the subject and object in

[185] Throughout all these illustrations, I only mention the constraints which are immediately relevant to the acceptability of the structures and for the purposes of the argument. It is of course important to say that there are constraints which these structures do not obey or they obey vacuously, However, the validity of these violable or non-violable constraints does not have much impact on their acceptability. To keep the coherence of the argument to a manageable size, they are not mentioned.

peripheral ground position. The structure in (73d) is also acceptable. The object is in preverbal position and as doubled it is a link and the subject is in the tail. Thus, the answer in (73d) satisfies the PREVERBAL DOUBLING constraint rendering a link-focus-tail instruction. The last two structures (73e) and (73f) are less preferred due to the violation of the VERB-FINAL constraint. Moreover, the accent falls on the verb in the verb final position and it should be noted that these final orders are not natural in this context due to the length of the processing requirement that is required by the speaker. Native speakers would rarely choose such an order, which introduces the new information so late in the structure, unless they would want to reveal a special interpretation. For instance, these answers could be more appropriate in a contrastive context where the fact that the government raised the taxes is either denied or comes as a surprise to the speaker and the hearer, followed by additional material (cf discussion in section 5.3), as in (74). They are also acceptable as 'rhetorical' questions followed by an adverbial, such as 'pali' *again*, as in (75):

(74) To akouses? I kivernisi ti forologia [$_{F}$ tin **AFKSISE**] … ti tha kanoume?
it-cl heard-3sg! The goverment-nom the taxes-acc it-cl raise-3sg/PS…
'Did you hear? The government RAISED the taxes… What are we going to do?'

(75) Den to pistevo! I kivernisi ti forologia [$_{F}$ tin **AFKSISE**] pali ?...
Not it believe! The goverment-nom the taxes-acc it-cl raise-3sg/PS again ...
'I don't believe it! Did the government RAISE the taxes again?'

The interaction of word order, cliticization, accent placement and context is summarized in Table (2):

TABLE 2: THE INTERACTION OF CONTEXT, ACCENT PLACEMENT, WORD ORDER AND CLITIC DOUBLING

CONTEXT	**SUBJECT FOCUS**	**OBJECT FOCUS**	**VERB FOCUS**
clause-initial	✓**S$_F$** clVO	***O$_F$** clVS GROUND OBJECT DOUBLING	✓cl**V$_F$**SO
clause-initial	**? S$_F$**OclV VERB FINAL WORD ORDER	***O$_F$**SclV GROUND OBJECT DOUBLING VERB FINAL WORD ORDER	**?** cl**V$_F$**OS WORD ORDER
clause-medial	✓clV**S$_F$**O	*clV**O$_F$**S GROUND OBJECT DOUBLING	✓Scl**V$_F$**O
clause-medial	**?** O**S$_F$** clV VERB FINAL	*S**O$_F$** clV GROUND OBJECT DOUBLING VERB FINAL	✓Ocl**V$_F$**S
clause-final	**?** clVO**S$_F$** WORD ORDER	*SclV**O$_F$** GROUND OBJECT DOUBLING	**?** SOcl**V$_F$** VERB FINAL WORD ORDER
clause-final	✓OclV**S$_F$**	*clVS**O$_F$** GROUND OBJECT DOUBLING WORD ORDER	**?** OScl**V$_F$** VERB FINAL

We can observe the following in Table 2:

In the subject focus context, the subject is in focus, while the object is part of ground. This means that WORD ORDER is satisfied by **S**clVO, OclV**S**, and clV**S**O, and hence all three orders would be equally acceptable. However, WORD ORDER is violated by **S**OclV and clVO**S** resulting in mild infelicity. OBJECT DOUBLING requires that doubled objects have to be interpreted as ground. This constraint is satisfied, as the subject focus context marks the object as ground. Hence, our constraint set predicts that doubled and non-doubled orders will be equally acceptable. ACCENT FOCUS requires

that accented constituents are interpreted as focus. This requirement is satisfied by orders with accent on the subject. VERB FINAL is violated in O**S**clV and **S**OclV resulting in infelicity.

In the object focus context, the object is in focus, while the subject is part of ground. OBJECT DOUBLING requires that doubled objects have to be interpreted as ground. This constraint is violated by all clitic doubled orders in the object focus context, as the object is focused. Hence, we predict clitic doubled orders to be less acceptable than doubled ones, which do not violate OBJECT DOUBLING. GROUND is violated by all orders, since ground information (clitic doubled objects) cannot carry the accent. ACCENT FOCUS is met by orders with accent on the object, however its effect is very odd since the object is clitic doubled. WORD ORDER is violated by **O**SclV and clVS**O**.

In the verb focus context, the verb is in focus, while the subject and the object are ground constituents. All orders are acceptable with the exception of SOcl**V** and OScl**V** which violate the verb final constraint. WORD ORDER is violated by cl$\mathbf{V_F}$OS and SOcl**V**. Note, though, that overall the effects of the violation of WORD ORDER are much less crucial in comparison to the violation of constraints such as OBJECT DOUBLING, GROUND or ACCENT FOCUS.

In what follows, I provide a general discussion of the results on the attested word order variation in different focus contexts and its implications for the role of the different components of grammar in encoding information structure properties.

5.5.2 Discussion: Is Word Order the Weakest Link?

In the previous sections 5.5 and 5.5.1 we looked at the interaction of accent placement, context, word order and finally clitic doubling in the realization of information structure. We saw how and to what extent this interaction substantiates the S-IS underdeterminacy hypothesis. What is evident in Table (1) and Table (2) is that one focus can have different spell-out positions. We saw that not all the possible positions are equally acceptable. Some options are less marked and some more marked, depending on the contribution of phonological syntactic and morphological factors.

These factors have the form of constraints which restrict the apparent variation in the distribution of syntactic constituents. The strength of each constraint in determining the information structure of an utterance depends on the extent to which it reflects an unambiguous grammaticalization of an information structure function. It seems that accent and doubling could be viewed as the grammaticalization of focus and ground information, respectively, whereas word order does not relate to similar strong grammaticalization effects.

To a certain extent the explanation for the weak information structural role of word order lies in its ambiguity: Looking at Table (1) and (2), we see, for instance, that SVO does not violate any of the constraints and it is felicitous/ compatible with all the information structure partitions attested. However, even if word order is not ambiguous and does violate constraints, still the resulting preferences are weaker. For example, the orders VOS and VSO are not felicitous in a subject and an object focus context respectively (the ground NP should be dislocated to a peripheral position). The truth is, though, that the violation of the ordering constraints is much less crucial than the violation of accent placement. Generally, in the absence of accent and clitic doubling, a given order may give no indication of the ground-focus partition: for instance, SVO and OVS may have a link-focus or a focus-ground partition, depending on the accent placement and doubling. Similarly, a VSO structure may allow for a wide or narrow focus interpretation depending on the accent placement, e.g. VS**O** and clV**S**O. Unlike word order, clitic doubling is unambiguously associated with the ground interpretation of objects. However, unlike accent, doubling is sufficient but not necessary for the realization of ground NPs and, of course, it only affects objects (cf. Section 5.5.1). Quite often, however, there are morphosyntactic constraints on information structure which are as strong as phonological constraints. The violation of the requirement that focused NPs cannot be doubled is as fatal as the violation of the requirement that accent falls on the focused constituent (cf. Table 2 with object focus): the interaction of doubling and accent placement in object focus resulted in fatal ungrammaticality. Thus, all the factors discussed in this section have an effect on the acceptability of a given structure. Although accent placement seems to be the most determining factor in the realization of information structure, the role of morphosyntax (object doubling) is also important for the grammaticalization of given information. Word order is the factor which underdetermines information structure: word order offers more than one possibility – link-focus or focus-tail and it is up to

the interlocutors to go either way and opt for one of the two options. Some options can be more sophisticated than others, of course, in the sense that their acceptability is constrained by the status of the focused element (e.g. contrastive/corrective readings). Still, word order makes certain interpretations more readily available in certain positions.

From the discussion so far, it is now obvious restrictions imposed by word order hold for the realization of ground material but not for focus. Hence it is predicted, that the word order does not constrain focus but given information (evident by the dramatic effects of PREVERBAL DOUBLING and WORD ORDER constraints discussed on given material).

So, given the fact that word order is the weakest factor in determining information structure possibilities and as a result it seems that information packaging does not entirely regulate word order, the question that emerges is the following: what - eventually - regulates word order in Greek? Or, what aspect of grammar do syntactic rearrangements have an impact on? Moreover, despite that flexibility, why are certain orders ruled out as infelicitous in certain contexts, as shown in section 5.5.1? I will tackle these questions in section 5.7 and 5.7.1

In the following section 5.5.3, I discuss the case of all-focus contexts. The discussion will further illuminate the main points presented in the current section.

5.5.3 All-Focus Contexts and Topichood

In section 5.3.1.1 it was shown that the realization of an all-focus context is not exclusive to a single structure. Both VSO and SVO are compatible with an all-focus context.

(76) **All-focus**

Kanena neo?

Any news?

a. [$_{\mathbf{F}}$ i kivernisi tha afksisi ti **FOROLOGIA**] **SVO**

the government-nom will-fut raise-3sg the taxes-acc

'The government will raise the taxes'

b. [$_{\mathbf{F}}$ tha afksisi i kivernisi ti **FOROLOGIA**] **VSO**
will-fut raise-3sg the government-nom the taxes-acc
'The government will raise the taxes'

The question that immediately arises concerns the specific configuration that allows for these contexts. Based on Selkirk's focus marking algorithms in (5-6) and Reinhart's (1995, 2006) stress theory, stress on the rightmost constituent can project to the category containing this constituent, thereby giving rise to a broader focus domain. In SVO and VSO in (76 a-b) above the syntactic configuration is such that it can allow for a broad focus domain. It seems that the preference for these word orders in a broad focus context is a pragmatic requirement which is satisfied in the syntax. We expect under the ACCENT FINAL constraint that orders with the accent on the rightmost constituent will be preferred. Thus, these orders satisfy the ACCENT FINAL constraint.

Nevertheless, these are not the only structures which allow for an all-focus reading. First, besides VSO, other preverbal orders such as VOS are appropriate in all focus contexts (cf. 4.3.1.1).

Moreover, Roussou & Tsimpli (2006) and Alexopoulou & Kolliakou (2002) show that OVS and OclVS are also felicitous predominantly in *news registers*.

(77) An amazing gathering of people yesterday at the Athens Festival Hall
a. [$_{\mathbf{F}}$ ti sinavlia organose to idrima meizonos elinismou] **OVS**
The concert-nom organize-3sg/PS the foundation -acc world hellenic-gen
b. [$_{\mathbf{F}}$ ti sinavlia tin organose to idrima meizonos elinismou] **OclVS**
The concert-nom cl-her organized-3sg the foundation-acc world hellenic-gen
'The Foundation of the Hellenic World organized the concert'

There is actually a preference for left dislocated and CLLD orders in news reporting. This is due to the fact that the object in question becomes the topic of discussion or the *discourse topic*, which is different from the sentence topic.

Let us for a minute examine this distinction: Sentence level topics (sentence topics) have been associated with 'old information', 'givenness', 'aboutness' (see

Kuno 1972, van Dijk 1977, Reinhart 1981, Prince 1981, Lambrecht 1994 among many others). According to Reinhart's (1981, 2004) definition of sentence topics, these are the expressions whose referent the sentence is about. The preverbal object is interpreted as a sentence-level topic in (78a). Sentence (78b) is partitioned into focus and ground. The sentence level topic is part of the ground.

(78) a. Perisi to kalokairi i Eleftheria Arvanitaki tragoudise gia proti fora sto Londino.
Last year Eleftheria Arvanitaki sang in London for the first time.

b. [ti sinavlia]$_{\textbf{S-TOP}}$ tin organose to idrima OclVS
The concert-nom cl-fem-acc organize-3sg/PS the foundation -acc
meizonos elinismu
world hellenic-gen
'The Foundation of the Hellenic World organized the concert'

Let us now examine the notion of discourse topics with the example in (79) below:

(79) a. [To idrima meizonos elinismu]$_{\textbf{S-TOP}}$ organose [ti sinavlia]$_{\textbf{D-TOP}}$
The foundation of the hellenic world-nom organize -3sg/PS the concert-acc
'The foundation of the hellenic world organized the concert'

b. Ixe terastia proseleusi kinu.
had-3sg huge turnout-nom audience-gen
'It had a huge turnout'

Example (79) consists of a sequence of two sentences, sentence (79a) and sentence (79b). Sentence (79b) is a discourse continuation of sentence (79a). In (79a) the preverbal subject is interpreted as the sentence topic of (79a), while the discourse topic is formed by the sequence of (79a) and (79b); it is the postverbal object *tin sinavlia* 'the concert'.

Example (79) shows two things. First, it illustrates that sentence topics and discourse topics do not need to coincide. Secondly, it demonstrates that a discourse topic can appear in a postverbal position. According to Gryllia (2009) (who follows Reinhart 1981), the discourse level topic is defined as follows: a discourse-level topic

involves a sequence of at least two sentences, and is defined as the expression whose referent this particular stretch of discourse is about.

Gryllia (2009) makes a further observation. She notes that discourse level topics may coincide with sentence topics. She illustrates this in the example in (80):

(80) a. [[Tin parastasi]$_{\text{S-TOP}}$]$_{\text{D-TOP}}$ skinothetise o Stanislavski.
the performance-acc direct.3sg/PS the Stanislavski -nom
'The performance, Stanislavski directed.'
b. Gnorise megali epitihia.
know.3sg/PS big success-acc
'It was a great success.'
(example from Gryllia 2009, p.72)

Gryllia (2009) argues that example (80) consists of a sequence of two sentences, sentence (80a) and sentence (80b). In (80a) the preverbal object is interpreted as a sentence topic of (80a), and at the same time it is the discourse topic of (80a) and (80b). This shows that sentence- and discourse-topic may coincide. Gryllia also claims that example (80) provides evidence that in Greek discourse topics can be syntactically marked by fronting.

Having seen the difference between sentence topic and discourse topic, my question is: how both OVS and OclVS can be appropriate answers to an all focus context. Furthermore, if both are, is there an interpretational difference between the two?

Gryllia (2009) claims that the presence of a clitic is a tool for distinguishing sentence level topics from discourse level ones and that the presence of a clitic is indicative of sentence level topics. She provides the example in (81):

(81) a. i Maria potise tis triantafilies ke tis petunies
the. Mary-nom water-3sg/Ps the roses-acc and the petunias-acc
'Mary watered the roses and the petunias.'
b. [Tis triantafilies]$_{\text{S-TOP}}$ tis kladepse kiolas.
the roses-acc cl-them prune-3sg/PS also
'The roses, she pruned them as well.'

c. Meta pige gia kafe me to Yani.
afterwards go-3sg/PS for coffee with the John-acc
'Afterwards, she went for coffee with John.'
(Gryllia 2009: p.72)

Example (81) consists of a sequence of three sentences. Example (81b) contains a preverbal object that is doubled by a clitic. The preverbal object in (81b) is interpreted as a sentence-level topic. Gryllia argues that this is the only available interpretation for the preverbal object in (81b); the preverbal object in (81b) cannot function as a discourse level topic, since in (81c) the discussion is no longer about the roses. Gryllia claims that the presence of the clitic in (81b) is necessary for a felicitous interpretation of *tis triantafilies* 'the roses' as a sentence-level topic. This is shown in example (82).

In (82) the lack of the clitic makes the discourse infelicitous, as shown in (82a) and (82b). Thus, the interpretation of a fronted object as topic requires the obligatory presence of a clitic pronoun. The fact that the fronted object cannot be discourse topic is further supported by the fact the discourse is even worse in (82c) when the discussion shifts to a different subject.

(82) a. i Maria potise tis triantafilies ke tis petunies
the. Mary-nom water-3sg/Ps the roses-acc and the petunias-acc
'Mary watered the roses and the petunias.'
b. *[Tis triantafilies]$_{\text{S-TOP}}$ kladepse kiolas.
the roses-acc prune-3sg/PS also
'[The roses]$_{\text{S-TOP}}$ she pruned them as well.'
c. ?? Meta pige gia kafe me to Yani.
afterwards go-3sg/PS for coffee with the John-acc
'Afterwards, she went for coffee with John.'

Gryllia's interpretation of the above examples is actually compatible with our assumptions on non-monotone anaphora of (sub-selectional) links in Section 5.4.2. I argued that an anaphoric relation accounts for the obligatory doubling of preverbal objects, which affects their interpretation as links/topics. However, although I agree with Gryllia's (2009) claim that a sentence topic can simultaneously be a discourse topic as in (80), I do not believe that the distinction in (81)-(82) does not allow the

association of clitic doubling with sentence level topics. Let us look again the example in (83):

(83) a. Perisi to kalokairi i Eleftheria Arvanitaki tragoudise gia proti fora sto Londino.
Last year Eleutheria Arvanitaki sang in London for the first time.

b. [tin sinavlia]$_{\textbf{Link}}$ tin organose to idrima OclVS
The concert-nom cl-fem-acc organize-3sg the foundation –acc
mizonos elinismu
world hellenic-gen
'The Foundation of the Hellenic World organized the concert'

c. [tin sinavlia]$_{\textbf{Link}}$ organose to idrima meizonos elinismu OVS
The concert-nom organize-3sg/PS the foundation -acc world hellenic-gen
'The Foundation of the Hellenic World organized the concert'

Both utterances (83b-c) are felicitous continuations in the context of (83a). It is not apparent what exactly doubling does in (83b) and how the differences between (83b) and (83c) could be accounted for. The main fact here is that there is no difference in the propositional content and no difference whatsoever in the information structure between the two sentences; they both form a link-focus instruction. In both cases the left dislocated objects, regardless of whether they are doubled or not, perform the same function as a link.

One could possibly argue that doubling affects the cognitive status of the doubled NP (as in Alexopoulou 1999). More specifically, Gundel *et al*. (1993) propose a givenness hierarchy of referring expressions. Weak pronouns occupy the highest place in the hierarchy, being the most given entities in the discourse, followed by demonstratives, definite NPs, referential NPs and indefinite NPs. Thus, pronouns are more given than definite NPs. Now, what is a doubling construction or a doubled definite? It is a definite NP coindexed with a pronoun. In consequence, clitic doubling of definite NPs probably enhances the givenness or aboutness or familiarity of the referring expression, since it constists of a combination of two of the highest elements in the givenness hierarchy, in terms of Gundel *et al* (1993). It seems that clitic doubling of NPs does not affect the information structure of sentences such as the

ones (93), yet, it can have an effect on the cognitive status of the definite NP (cf. also Alexopoulou 1999).

In my view the difference between OVS and OclVS in all-focus discourse has also to do with *specificity* effects found in CLLDed NPs as opposed to Topicalized NPs. Topicalized NPs, are typically non-specific. Such a constraint may account also for the unacceptability of (84) and which is compatible with felicitous examples of Topicalization. In the following examples the Topicalized NP is clearly non-specific.

(84) a. Psaxnoume gia kainourgia epipla gia to saloni
'*We are looking for new furniture for the lounge'*
b. Trapezaria nomizo tha vrume efkola,
Dining table-acc think-1sg will find-3pl easily
gia kanape den ksero pu na koitaksoume.
for couch-acc not know-1sg where to look for-3pl
'I think we will find a dining table easily... I don't know where to look for a couch'

The utterance in (84), which could be considered felicitous in a news register context, suggests that the requirement for non-specificity in association with topicalized NPs might actually apply to an everyday register. Note though that it is not only definite NPs but also specific indefinites objects that may be topicalized in a formal/news register as in (85):

(85) Mia ginaika peripu saranda xronon ine ipopti gia to skandalo...
A woman-acc about forty years old-gen is suspect-nom for the scandal-acc
'A forty year-old woman is a suspect for the scandal…'

I will not discuss this particular point further here. The exact interpretational effects of clitic doubling are beyond the scope of this thesis and are left for further research. L

Last, but not least, I would like to refer the reader to Kechagias's (2011) more insightful analysis which distinguishes Topicalization –which he associates with Left Dislocation (LD)- from CLLD in the following way: Kechagias proposes that LD constitutes a strategy of ground fronting or ground dislocation and that CLLD constitutes a strategy of topic fronting. Following a logico-semantic

conceptualization, Kechagias (2011) argues that topic fronting lies in the intuitive assumption that we typically comment on something after it has been inserted into the discourse rather the other way round. On the other hand, ground fronting lies in two-well known processing advantages associated with early mention of ground information: first, the earlier ground information occurs in a sentence, the easier it is to link it to the previous discourse. Second, new information is easier to integrate when the ground information has been processed. Since ground material by default represent more salient or more accessible information it is advantageous to be placed in a position where it precedes new information' (Kechagias, 2011: 302).

Therefore, the fact that in environments like (84) both strategies are in principle available is due to the fact that the two articulations are inherently related: recall that topics are ground information by default (an utterance with CLLD cannot answer an all-new information seeking question) and comments typically convey the part of utterance that is considered 'new' (or alternatively the one that contains focus); as such, both CLLDed and LDed NPs do not bear the nuclear stress (although there might be intonational differences).

In the following section, I discuss a further implication of the proposed analysis with respect to the phenomenon of focus ambiguity.

5.6 Focus Ambiguity and Word Order

In the previous section 5.5.3 we saw that a variety of word orders can realize an all-focus instruction. I also argued that in an unmarked, neutral structure (e.g. SVO) the same type of prominence can signal different types of focus domains. This argumentation supports the view that prominence itself is not sufficient to determine what the *exact* focus domain is each time, because it is ambiguous with respect to focus. Focus projection in SVO structures is unexceptional because it does not have to be postulated anywhere. If we observe the evidence closely, it emerges that the role of the relation between focus and stress lies systematically in the directionality of prominence: all that is sufficient and necessary is rightmost prominence.

I also argued that the outcome of the focus projection or of the wide vs. narrow focus domain is the result of the alignment or placement of rightmost boundaries of constituents. Therefore, stress assignment on the right periphery will

indicate the focus domain with the consequence that the right border of a constituent will coincide with its right domain of prominence.

Now, while syntax facilitates the realization of focus, a syntax based account of the relation between focus and stress does not correctly predict the interaction between prominence and focus. It predicts that this interaction cannot be anything else than one-to-many because the focus domain is not always isomorphic with the stressed constituent and only one-to-one when focus coincides with the stressed element. Based on the proposal in Chapter 4, the relation between focus and prominence does not need to be defined in syntax. Syntax is not responsible for the actual focus that will be chosen each time a sentence is uttered. The role of syntax is, using the syntactic machinery available in each language, i.e. word order, scrambling, clitic doubling, clefting, to package the information chosen by discourse requirements with the help of intonation Vallduví (1992).

Following on from the above, here I would like to set forth the view that focus ambiguity is as the end product of the interaction or mapping between intonation and discourse, and not the result of the correspondence between prominence and focus. The ambiguity only arises in the grammar when according to discourse requirements one particular interpretation is chosen each time, encoding the focus by means of a particular intonation. The ambiguity does not occur in the direct or indirect relationship between focus and prominence as defined in syntax, but rather via a direct mapping between phonology and pragmatics/discourse (cf. the discussion in section 4.2).

In this sense, focus is a pragmatic phenomenon and not a syntactic one. Focus projection is unexceptional, since it should not need to be postulated anywhere or at least by syntactic rules. Hence, I argue that it is up to discourse conditions, rather than syntax, to determine whether a structure with a particular stress is appropriate in a given context.

Based on all the above assumptions, I extend the argument to provide a tentative explanation for the cases of all-focus where no projection or focus ambiguity is available, that is, cases where no S-P mapping (alignment) is available and no focus algorithms such as the ones proposed in Selkirk (1995). I reason that the compatibility of these CLLDed and LDed orders in all-focus context is -by and large- a consequence of the fact that word order plays a minor role the articulation of information structure partitions, as argued in 5.5.2. This means that that word order is probably not entirely regulated by a pragmatic articulation of the sentence.

Anticipating the discussion to follow, in section 5.7.1, I offer a tentative proposal also accounting for the above puzzling orders. Following Kechagias (2011), I assume that information packaging in Greek does not exclusively have to do with a pragmatic structuring in terms of focus, topic, ground but it may well have to do with a more abstract articulation of logico-semantic or conceptual nature, a logico-semantic or conceptual packaging, a 'predicative' vs. 'non-predicative' mapping. These mapping are the grammaticalization of two interface strategies that belong to a more abstract level or conceptual of information packaging: Non-V-initial orders realize a predicative mapping, while V-initial orders realize a non-predicative mapping. The first involves recognition of an entity prior to predication, that is, recognition of a 'logical subject' for which a property is ascribed on denied through the 'logical predicate', leading into a formal partitioning of the utterance between a logical subject and a predicate, while the second involves just recognition of a state of affairs or an 'eventuality' (Gecseg & Kiefer 2009), whereas the recognition of any other entities is only relevant as long they are participants in that event or state of affairs.

In accordance with the above, OVS and OclVS partition the utterance into a logical subject and a predicate; $O_{\text{logical subject}}$ $VS_{\text{predicate}}$ and $O_{\text{logical subject}}$ $clVS_{\text{predicate}}$. The logical subject is the logico-semantic entity for which a property is ascribed through the logical predicate. In this respect, the logical subject regardless of whether it is a syntactic subject as in SVO or object as in OVS, it becomes the 'topic' introduced into the discussion, about which the predicate holds or not. Hence, these orders can be compatible with contexts such as news registers/formal statements/announcements or discourse continuations by virtue of the fact that these structures apart from having the information structure properties of being topicalized or CLLDed, they are also subject to a logico-semantic partitioning that resides in the C-I interface.

Similarly, VSO and VOS structures as will be discussed in 5.7.1 conform into a non-predicative mapping where no recognition of a logical subject occurs, therefore being compatible with describing states of affairs or reporting events.

To conclude, the realization of all-focus instructions in Greek also confirms the hypothesis that S-IS mapping underdetermines focus intepreration. However, the underdeterminacy effect is not due to the focus projection algorithm defined in focus-stress theories of information structure such as Selkirk (1995) which try to explaining the mismatches between syntax and information structure in the syntax. Evidence is provided by the fact that all-focus instructions are available in orders where no focus

ambiguity arises. Based on the argumentation developed in Chapter 4, focus ambiguity is the end-effect of the proposed prosody-discourse mapping which assigns different intonational realizations to the same syntactic structure under different contextual requirements.

In the absence of specific prosodic prominence (nuclear stress), which is the case of all-focus contexts, the availability of preverbal object structures in contexts such as news registers or announcements can be explained if we assume a multi-layered information structure such as the one discussed earlier. This does not only explain the behaviour of preverbal object constructions in certain contexts but provides an account for the organization of word orders in general (cf. the discussion in section 5.7.1).

5.7 Verb-Initial Orders: A C-I Interface Requirement

In section 5.5, I stated the V-initial orders (VSO and VOS) are exceptional in the contexts of object and subject focus respectively, because although they satisfy the ACCENT FINAL constraint, they fail to satisfy the ACCENT FOCUS constraint. In other words, stress on the rightmost element is not related with object or subject focus interpretation but rather with an all-focus or even a null-focus interpretation.

In effect, these orders provide a challenge for the stress-based account offered in Chapter 4. In this section, I offer a different proposal for these structures, arguing that they conform into a non-predicative mapping (in accordance with the discussion in section 5.6.), where no recognition of an independent logical subject occurs prior to predication and no formal partition of the sentence occurs, thus, being compatible with describing states of affairs or reporting events.

Let us first look at how exactly these structures violate the Focus Interpretation principle. Recall from Section 5.3.1 that VSO has been claimed to be the canonical word order in Greek based partly on the fact that it can be used all-new information focus contexts (Catsimali 1990, Tsimpli 1990; 1995, Philippaki 1985, Alexopoulou 1999, Tsiplakou 1998 among others):

(86) Kanena neo?
Any news?

[$_{F}$ Kerdise to Pasok tis **VULEFTIKES EKLOGES**] **VSO**
Win-3sg/PS the Pasok-nom the parliamentary elections-acc-pl
'Pasok won the parliamentary elections.'

(87) Ti sinevi?
What happened?
[$_{F}$ afksise i kivernisi ti **FOROLOGIA**] **VSO**
raise-3sg/PS the government-nom the taxes-acc
'The government raised the taxes.'

However, although compatible with an all-focus context VSO, unlike SVO, displays a somewhat peculiar behaviour, in the sense that it cannot be the answer to questions inducing a VP focus or an object focus. This means that under a neutral, unmarked stress pattern where the object receives the stress, VSO cannot be an answer to a wh-question that requires focus on the object or the verb-complement constituent.

(88) Ti ekane i kivervisi?
What did the government do?
*afksise i kivernisi [$_{F}$ ti **FOROLOGIA**] ***VSO**
raise-3sg/PS the government-nom the taxes-acc

(89) Ti afkise i kivervisi?
What did the government raise?
*afksise i kivernisi [$_{F}$ ti **FOROLOGIA**] ***VSO**
raise-3sg/PS the government-nom the taxes-acc

Although stress falls on the object in (88) and (89) by default, no VP focus is licensed as in (88), nor can it be the answer to an object focus context as in (89).

Moreover, comparing SVO and VSO in terms of their general information structure properties it seems that the situation becomes more complicated. Athough, their syntax is different; their stress pattern is the same (clause final stress). However, their information structure can vary: they both give rise to all-new information focus but only one of them can give rise to an object focus. The stress is ambiguous with respect to focus in SVO; no such ambiguity is attested in VSO. In effect, we can

argue that they fall under the Generalization 2 of the S-P mapping (proposed in Chapter 4:4.5.3.2), which states that different syntactic structures carrying the same stress result in distinct information structures.

One could assume that the reason for the ungrammaticality in (88) and (89) is the fact that the VP domain retains the subject and/or the object which comprise given/old/ presupposed information. On the contrary, the old information in SVO is found in preverbal position, topicalized, outside the VP domain.

However, Kechagias (2008, 2011) provides examples that the 'oldness' of information within the VP domain is not the reason for the ungrammaticality of (88) and (89). Indeed, he shows that presupposed subjects are actually tolerated in VSO contexts as in (90):

(90) A: Ti anakalipse o Kolomvos to 1492?
What discovered-3sg the Columbus-nom in 1492?
'What did Columbus discover in 1492?'
B: to 1492, anakalipse o Kolomvos [$_{F}$ tin **AMERIKI**] AdvVS**O**
'At 1492, discovered the Columbus the America'
(example from Kechagias 2008: ex.121)

Similarly to VSO, VOS is also problematic in that it also violates the S-P mapping, i.e. in VOS structures stress on the subject cannot induce subject focus.[186] This is evident from the fact that VOS is not a good answer for a subject wh-question.[187] This is shown in (91):

(91) Pios tha afkisi ti forologia?
Who will raise the taxes?
* tha afksisi ti forologia [$_{F}$ i **KIVERNISI**] *VO**S**
will-fut raise-3sg the taxes-acc the government-nom
'The government will raise the taxes'

[186] I would like to think that no native Greek speaker would choose to answer a subject –question with an VOS structure. Although it is not unacceptable, it is most unnatural. I accept that its acceptability increases once the subject carries a contrastive reading or when the object is clitic left disclocated.
[187] Kechagias (2008/2009) provides an instructive criticism of previous syntactic accounts (Haidou 2001, Georgiafentis 2001, Alexiadou 1999) which derive VOS as movement of the object across the subject for focusing reasons.

However, the same structure improves in acceptability in the following context question (92):

(92) Ti akouses sto radio?
What did you hear on the radio?
[$_{F}$ tha afksisi ti forologia i KIVERNISI] **VOS**
will-fut raise-3sg the taxes-acc the government-nom
'The government will raise the taxes'

Here, the whole sentence is new-information. The focus is not just the subject or the object but the whole sentence. What is also more interesting is that the example in (89) with focus on the object is acceptable if we dislocate the object as in (93) or when the subject appears to be contrastively focused as in (94):

(93) a. Pios tha afkisi ti forologia?
Who will raise the taxes?
b. ti forologia tha tin afksisi [$_{F}$ i **KIVERNISI**] OclV**S**
the taxes-acc will-fut cl-it raise-3sg the government-nom
'The government will raise the taxes'

(94) a. Ti forologia tin afksise i **KIVERNISI**?
*Did the **GOVERNMENT** raise the taxes?*
b. Ohi, ti forologia tin afkise [$_{F}$ i **ANTIPOLITEFSI**] clOV**S**
No, the taxes-acc cl-it raised-3rd the opposition-nom
'No, the opposition raised the taxes'

Let me shed some more light into the interpretational effects of the VOS order.

In Chapter 2, section 2.2.1, I presented syntactic assumptions with respect to the derivation of VOS. While there is a general agreement on that the VO portion constitutes some kind of old/presupposed information or even topical information, there is no general agreement on whether the subject is new information focus or whether it can also be construed as contrastively focused. Consider the following discourse fragment in (95):

(95) a. Kanena neo?
Any news?
b. [$_{F}$ afksise ti forologia i **KIVERNISI**] **VOS**
raised-3sg the taxes-acc the government-nom
'The government raised the taxes'

Example (95) involves a VOS order which is perceived as a legitimate possibility (compared to VSO). The verb and the object crucially do not form any sort of idiomatic expression (as argued in Holton et al. 1997). On the other hand, the utterance can be uttered as 'out-of-the blue' so that there is no link to previous discourse that could establish the ground status of the referents of the object, while we can argue that the subject carrying the main stress is the intonational nucleus of the utterance. What this practically reveals is that, while there is no problem in considering the subject as new information focus, there is no particular reason for taking the object as peripheral or old/ground material.

With respect to cases such as the ones in (95), Kechagias (2008) provides further evidence that support our claim that the object is not part of the ground partitioning. Kechagias claims that strong evidence against the ground status of the DP object comes from the fact that any attempt to dislocate these objects leads to fatal results: given that ground material in Greek typically shows up dislocated to a position above TP (cf. Chapter 2: 2.2.1) we would expect that the utterances below should qualify as appropriate answers to the questions in (96) and (97):

(96) a. Ti egine stis 29 Maiu tu 1453?
'What happened on the 29th of May of 1453?'
b.? [$_{F}$ tin Konstantinoupoli katelavan i Othomani] ? **OVS**
the Constantinople-acc conquered-3sg the Ottomans
'Constantinople, the Ottomans conquered it'
(example from Kechagias 2008)

(97) a. Ti ine autos o thorivos?
'What is this noise?'
b. ? [$_{F}$ ena dendro kovi o gitonas] ? **OVS**
a tree-acc cuts-3sg the neighbour-nom
'A tree, the neighbour is cutting it'

On the contrary, the above questions are felicitously answered by a VOS order. Kechagias (2008) provides an additional piece of evidence from clitic doubling showing that if the DP-objects in the above examples are doubled, the grammaticality does not improve. It was established in Section 5.5.5 that doubling in Greek marks the doubled material as discourse familiar. If the DP objects in (96) and (97) were discourse given/ground then they should be able to tolerate doubling contrary to the examples shown below in (98) and (99):

(98) a. Ti egine stis 29 Maiu tu 1453?
'What happened on the 29th of May of 1453?'
b. * [**F** tin Konstantinoupoli tin katelavan i Othomani] * **OclVS**
the Constantinople-acc it-cl conquered-3sg the Ottomans
'Constantinople, the Ottomans conquered it'

(99) a. Kanena neo?
Any news?
b. *[**F** tin afksise ti forologia i kivernisi] ***clVOS**
it-cl raised-3sg the taxes-acc the government-nom
'The taxes, the government raised them'

Kechagias (2008) argues that all the above structures of VOS constitute broad focus domains similar to VSO; indeed, in all the cases examined so far VOS can invariably be substituted by the canonical VSO order with no serious changes in the information structure of the utterances involved. Furthermore, Kechagias (2008) assumes that VOS is probably more marked than VSO syntactically, (consider the derivational history of the two orders in Chapter 2: 2.2.1) and informationally: he assumes that VOS is what has been described in the literature as a *superman construction* (cf. Neeleman & Szendroi 2004), according to which an element is contained as focus enclave in a broader focus domain; and it is actually this articulated structure which makes VOS to seem less inappropriate in all-new information seeking contexts than VSO (Kechagias 2008).

Consider the following characteristic case below in (100). The focus enclave in VOS is shown schematically in (101):

(100) A:- den efere kanenas na pioume tipota
Not brought-3sg anybody to drink (we) anything
'Nobody has brought anything to drink...'
B: - min anisihis... [$_{\mathbf{F}}$ ferni bires o Aris] **VOS**
not worry-(you)... bring-3sg beers-acc the Aris-nom
'Don't worry... Ares is bringing beers;

(example from Kechagias 2008: ex. 89)

(101) a. [**focus** V O [**focus** S]
as compared to the homogeneous VSO
b. **[focus** V S O
(Kechagias 2008: 90)

In the following section 5.7.1, I will provide a tentative explanation for the behaviour V-initial orders as opposed to non-V-initial orders.

5.7.1 The Articulation of the Information Component in Greek

In the S-IS mapping discussed in this chapter, the S-IS underdeterminacy hypothesis proposed is constrained by prosody and further by morphosyntax (Sections 5.4-5.5.3). Among these constraints, I argued in section 5.5.3 that word order is the weakest factor in determining information structure possibilities. Word order does not entirely regulate information packaging, but rather the S-IS mapping underdetermines interpretations; in other words, what we have is an underspecified syntax in terms of information structure.

The question that emerges from the above is the following: what—eventually—regulates word order in Greek? Or, what aspect of grammar do syntactic rearrangements have an impact on? Moreover, despite that flexibility, why are certain orders ruled out as infelicitous in certain contexts, as shown in section 5.5.1 and 5.7?

In this section, I would like to explore an answer to the above questions suggested in a recent analysis on Greek by Kechagias (2011). This analysis argues that information packaging in Greek may be subject to a multi-layered information

structure: on one level a traditional pragmatic information structure partitioning (focus, topic, ground, etc) and on a second level, a conceptual or logico-semantic packaging motivated by independent articulations residing at the C-I interface (Gécseg & Kiefer 2009).

Let me first outline some assumptions made in previous Chapters. Recall from Chapter 1: 1.4 that the information component feeds directly into the C-I interface. Recall also from Chapter 3: 3:7 that along the lines of Neeleman & van de Koot (2008) word order can be regulated by the requirement for syntactic structures to correspond to independent articulations residing in the C-I interface which is responsible for reasoning, planning, forming and expressing intentions, perceiving sentences in context, incorporating pragmatic consideration, world knowledge, computing conversational implicatures etc. This idea is stated below in the condition in (102) proposed in Neeleman & van de Koot (2008):

(102) *Syntax to C-I Mapping Principle:*

Units of syntactic structure are aligned with units of information structure.

What the Mapping Principle in (102) reveals is that displacement in the syntax occurs for syntactic structures to be aligned with blocks of Information structure. This idea is in agreement with the Neeleman & van de Koot's (2008) templatic analysis outlined in Chapter 3: 3.7. At this point, let me explore some of their assumptions.

Following previous work, such as Vallduví (1992), Neeleman and van de Koot (2008) assume that information structure is an independent system with its own structure and that the pragmatic structuring of propositions into presupposed and non-presupposed portions is done by units which have a principled structure, such as rules in (103). At the C-I interface these units are not labels but rather relational dependencies:

(103) *C-I Interface Packaging Rules*

a. Topic → Comment

b. Focus → Background

Neeleman & van de Koot (2008) assume that all structures supplied by syntax are regulated by the C-I interface packaging rules in (103). In other words, all structures will fit into a topic-comment articulation or a focus-background articulation. So, for instance the reason that topics tend to appear displaced in the left periphery is for the interface condition in (103a) to be fulfilled. That is topic movement does not occur so that the topic constituent gets interpreted as topic but it rather takes place so that to mark its comment; prior to movement there is no syntactically marked comment. Similarly, focus movement takes place to mark its background, in line with Neeleman & van de Koot (2008).

However, Kechagias (2011), departs from the above assumptions (Neeleman & van de Koot 2008) arguing that information packaging may not only have to do with the accommodation of the above rules but it may well have to do with a more conceptual articulation of information flow. Kechagias (2011) following Césgeg & Kiefer (2009) argues that in Greek word order is regulated by two logico-semantic strategies or mappings: non-V-initial orders realize a 'predicative' mapping, while V-initial orders realize a 'non-predicative' mapping.

The first strategy, the predicative mapping, involves recognition of an entity prior to predication, that is, recognition of a 'logical subject' for which a property is ascribed or denied through the logical predicate, leading into a formal partitioning of the utterance between a logical subject bit and a predicate. Kechagias assumes that it is unambiguously realized in Greek as a non-V- initial order:

(104) *Syntax—C/I Correspondence in Greek (Predicative Mapping)*
A non-Verb Initial Order formally chunks an utterance into a Logical Subject Σ and Logical Predicate Π.

The second strategy, the non-predicative mapping, involves just recognition of a state of affairs or an 'eventuality' (along the lines of Gecseg & Kiefer 2009) whereas the recognition of any other entities is only relevant as long they are participants in that event or state of affairs. He assumes that it is unambiguously realized in Greek as a V-initial order:

(105) *Syntax—C/I Correspondence in Greek (Non-Predicative Mapping)*
A Verb Initial Order does not involve recognition of an independent logical subject prior to predication. As such no formal chunking occurs.

Neither mapping conveys information about the actual pragmatic partitioning of an utterance, and the accommodation of discourse functions such as topic, focus, ground or new information. The predicative and non-predicative mappings represent the grammaticalisation of two interface strategies that belong to a more abstract level of information packaging. What this practically means is that for example an SVO or an OVS order can actually correspond to more than one pragmatic partitioning. And it goes without saying that the same is true even for a V-initial order: a VSO linear output can virtually be subject to different information structures.

Based on the above analysis, I would like to give a provisional answer to some of the issues that were raised in the previous sections: (a) the peculiar behaviour of V-initial orders which conform to a broad focus reading rather than a narrow focus reading (cf. discussion on section 5.5.2, (b) the fact that all-focus interpretational contexts discussed in sections 5.5.1 and 5.5.3 are subject to underdeterminacy, e.g. SVO and VSO (and occasionally OVS) can be felicitous in all-focus contexts.

With respect to (a), I assume that V-initial orders, such as VSO and VOS, establish a non-predicative structure simply because they cannot establish a formal separation/split between a logical topic and a comment or predicate; in other words, no logical subject, or notional topic, is distinguished as an independent part of an utterance. This could be a potential explanation as to why the orders are not compatible with object or subject focus readings respectively in accordance with the discussion in section 5.7. A V-initial order surfaces as a natural order in environments where no need for a formal chunking exists (either on a strictly-pragmatic or a logico-semantic level). A VSO order does not qualify as a natural order in contexts where some pragmatic partitioning should take place, as in the following example:

(106) A: Ask Eleni to join us to the trip

B1: *ehi [**TOP** AFTI] polles doulies auto to mina *VSO

has-3sg she-nom many responsibilities-acc this the month

'She has many responsibilities this month'

B2: [**TOP** AFTI] ehi polles doulies auto to mina SVO

she-nom has-3sg many responsibilities-acc this the month

Thus, the reason that (106B1) is perceived as an unnatural option is due to an unsatisfied interface condition, in particular, the fact that the topic does not precede the comment. On the other hand, in (106B2) the same interface requirement is satisfied by placing the DP subject in a preverbal position according to the relevant C-I rule.

Indeed, VSO seems to be the optimal option in environments that contextual reasons do no push towards a pragmatic partitioning of the utterance into topic-comment or focus-background.

Similarly, VOS is not felicitous in a context that requires a pragmatic or logico-semantic chunking of the utterance into a logical topic and comment, as in (107). However, in (108) the intended predicative mapping is satisfied because the structure establishes a formal partition into a logical subject/topic and a comment.

(107) Pios tha afkisi ti forologia?

Who will raise the taxes?

*tha afksisi ti forologia [**F** i **KIVERNISI**] *VO**S**

will-fut raise-3sg the taxes-acc the government-nom

'The government will raise the taxes'

(108) Pios tha afkisi ti forologia to Noemvrio?

Who will raise the taxes in November?

to Noemvrio tha afksisi ti forologia [**F** i **KIVERNISI**] AdvVO**S**

in November will-fut raise-3sg the taxes-acc the government-nom

'The government will raise the taxes in November'

Under the above assumptions it seems that V-initial orders are in a way informationally specialized by the C-I interface mapping rules to convey the

articulation of contexts that typically show up in utterances that answer all new information questions or in utterances that occur in contexts with a plain narrative or presentational flavour.

On the other hand, non-V-initial orders, such as SVO or OVS, formally realize a predicative mapping that involves recognition of an entity prior to predication that separates the actual utterance into a logical topic-and a comment or logical predicate partition. Consider the following examples:

(109) Ti ekane i kivervisi?
What did the government do?
i kivernisi [$_F$ **AFKSISE TI FOROLOGIA**] S**VO**
the government-nom raise-3sg/PS the taxes-acc
'The government raised the taxes'

(110) Ti afkise i kivervisi?
What did the government raise?
[$_F$ ti **FOROLOGIA**] afksise i kivernisi **O**VS
the taxes-acc raise-3sg/PS the government-nom

This means that orders such as SVO and OVS are informationally specialized by the C-I interface mapping rules to denote a categorical, logico-semantic distinction between a logical subject and predicate or in terms of a pragmatic partitioning (at the pragmatic level of information structure not the logico-semantic) a topic-comment category as in (109) or even a focus-background as in (110) or a contrastive/corrective focus category.

However, the SVO word order presents with a paradox which brings us to problem (b) mentioned earlier in the discussion. Let me explain. Recall from the discussion in Chapter 2: 2.2.1, that according to a good portion of the literature (see Philippaki-Warburton 1985, 1987, Tsimpli 1990, 1995, Alexiadou & Anagnostopoulou 1998, Spyropoulos & Philippaki-Warburton 2001 inter alia) preverbal subjects have been invariably associated with topic reading (depending on how topichood is defined). Nonetheless, this generalization is too strong to be because preverbal subjects do not have to be interpreted as topics and/or ground. This

observation is not new; Sifaki (2003), Haidou (2004), Roussou & Tsimpli (2006) have also pointed out the empirical problems of such a strong association.

An SVO order can be used felicitously in contexts where the subject is part of a broad focus domain, that is, in contexts where the subject is neither meant to be pragmatically anchored to any previous discourse nor does it constitute a topic in terms of aboutness. Recall the discussion in section 5.5.3 and 5.5.1. The examples in (111) illustrate this:

(111) A: What's this noise?
B: [$_{F}$ o jitonas kladevi ta **DENTRA**] **SVO**
the neighbour-nom cut-3sg the trees-acc
'The neighbour is cutting the **trees**'

Moreover, as Alexiadou & Anagnostopoulou (2001) and Kechagias (2011) argue preverbal subjects may not only be pragmatically unanchored to any previous discourse, but can also be taken up by indefinites and quantified material. Consider the following cases in (112) and (113):

(112.) A: Why is Maria upset?
B:[$_{F}$ *kapios* pire to portofoli tis] **SVO**
somebody-nom took-3sg the wallet-acc of hers
'Somebody took her wallet'

(113) A: Why is the police around?
B: [$_{F}$ *ena aftokinito* htipise mia kiria] **SVO**
some car-nom hit-3sg a lady-acc
'Some car hit a lady''

Under the present analysis these data can be accounted rather straightforwardly: SVO formally realizes a predicative mapping that involves recognition of an entity prior to predication. Thus, displacement of a DP subject from a vP internal position to a position above it grammaticalizes this logico-semantic or conceptual strategy of the interface without the subject having to be interpreted pragmatically as a topic or in fact any other pragmatic category.

Gecseg & Kiefer (2009), discussing the alleged topic status of preverbal subjects in Hungarian follow a similar line of argumentation stating that preverbal subjects in this language do not have to be topics, since the partition [topic-comment] and [logical subject-logical predicate] correspond to different levels of information partitioning. The topic of the sentence is a constituent denoting the individual(s) the sentence is about with respect to a particular context. In contrast, a logical subject is simply the constituent denoting the individual(s) the logical predicate is about. The selection of a logical subject corresponds to a particular strategy that does not necessarily depend on the particular context in which the sentence is uttered. A consequence of this relative contextual autonomy is that a logical subject can even denote a brand new individual, that is, a referent completely unidentified both for the speaker and the hearer. Thus, while topic is a pragmatic notion corresponding to information already introduced in the discourse (or related to it), a logical subject is a syntactic-semantic notion corresponding to a plain aboutness relation that is not dependent on previous discourse.

Hence, VSO and SVO can both give rise to the same pragmatic effect, that is, all new focus interpretations. Their difference can be attributed to the fact that the two orders constitute a formal realization of two distinct strategies of conceptual nature. A VS order relates to a strategy where a speaker's attention is drawn to a state of affairs in which some participants may or may not be involved. On the other hand the SV linear order constitutes a grammaticalisation of a predicative conceptual strategy that involves recognition of a logical subject prior to predication , chunking the utterance into two bits (for further details, see Kechagias 2011).

The picture with respect to OVS is not clear. The OVS order is not readily compatible with an all-focus context. Consider the following example:

(114) What happened?

a. [$_{\mathbf{F}}$ afkise i kivernisi ti **FOROLOGIA**] **VSO**
raise-3sg/PS the government-nom the taxes-acc
'The government raised the taxes'

b. [$_{\mathbf{F}}$ i kivernisi afksise ti **FOROLOGIA**] **SVO**
the government-nom raise-3sg/PS the taxes-acc

c. *[$_{\mathbf{F}}$ ti forologia afksise i **KIVERNISI**] ***OVS**
the taxes-acc raise-3sg/PS the government-nom

What the utterances above show is that once the speaker has opted to go for a non-V-initial order, that is, a predicative mapping, the only possibility is to front the subject. Nonetheless, it seems that in some cases entities other than subjects can fulfil this interface requirement leading into a predicative mapping for no obvious pragmatic reason. Consider the following cases below:

(115) (telephone conversation)
A: What are you doing?
B1: Vlepo tile**ORASI**; esi? B2: tile**ORASI** vlepo; esi?
see.1s television; You *television see.1s; you*
'I am watching TV; you?'
(example from Kechagias 2011: 258)

According to Kechagias (2011), in the example above the object *television* that normally appears in the canonical post-verbal position and bears the nuclear stress participating in all new-information corresponding utterances, can leave its base position for a position before the verb for no obvious pragmatic reason; they are neither topics, nor ground material or narrow (contrastive/corrective/scalar) foci. Such cases can also be explained through the assumption that a non-V-initial order feeds the interface strategy according to which prior to predication there is recognition of an entity about which the predicate is meant to be about regardless the actual pragmatic function the fronted DP performs or the pragmatic partitioning of the utterance (also briefly argued in section 5.6).

To conclude, in this section, I presented a tentative explanation for the fact that word order appears to play a minor role in the pragmatic structuring of the utterance and that syntax underspecifies information structure. This explanation comes from the analysis proposed for Greek by Kechagias (2011). This analysis claims that information packaging in Greek is subject to (a) a pragmatic structuring in terms of focus, topic, ground but also (b) a different level, a logico-semantic packaging of conceptual nature, a predicative vs. non-predicative mapping which potentially regulates word order in Greek. This analysis provides us with an possible explanation of the S-IS mismatches resulting from the S-IS underdeterminacy hypothesis: (a) the odd behaviour of V-initial orders in narrow focus structures (b) the fact that an all-focus context or all new information focus can be realized by a

predicative structure such as SVO. This is a very interesting area that requires though further research.

5.8 Concluding Remarks

In Chapter 1, I presented evidence for the S-IS mapping in Greek, arguing that this S-IS mapping underdetermines focus interpretation in Greek in two ways:

(116) **S-IS MAPPING**

(i) A single structure can realize a number of information structure partitions.

(ii) A single information structure partition can be realized by multiple word orders.

In this Chapter, I tested (i) and (ii) and I offered a different approach based on the argument that the S-IS mismatches can only be accounted for if we assume a distinct level of representation to accommodate them, i.e. an independent level of information structure. I examined the information structure properties of word orders in Greek employing aspects of theories of information packaging (developed in frameworks such as Selkirk 1995; Vallduví 1992; Büring 1997, 2003) and argued for the opposite view, namely, that the contribution of stress/accent placement in realizing the information structure of the sentence is probably more crucial than word order.

More specifically, this chapter examined to what extent the mapping of word order onto units of InfoStructrure validates the S-IS underdeterminacy hypothesis alongside the acceptability outcomes of the variation attested. I assumed that the realization of information structure in Greek is the end product of the interaction of syntax (word order), prosody (accent placement) and morphosyntax (object doubling). I proposed that the interaction between these components of grammar is subject to a set of constraints on information structure which are both syntactic and phonological in nature (Section 5.4). I argued based on (30) that although the distribution of focus via stress is free – the interpretational effects of focus are not restricted to specific positions – certain syntactic effect as well as interpretive effects constrain the S-IS underdeterminacy hypothesis. Similarly the distribution of given material also constrains the S-IS underdeterminacy hypothesis (e.g. preverbal objects have to be

doubled when given). Nevertheless, it seems that among the constraints in (30), the phonological ones have the strongest effects on the acceptability of word orders in certain contexts followed by morphosyntactic constraints such as clitic doubling and word order.

In sections 3 and 4, assuming notions of information packaging, I examined the distribution of focus and ground material in Greek and I showed how the mapping between syntactic categories and information structure constituents is achieved. First, I examined the focus marking in Greek word orders in different contexts and the ways it is constrained. More specifically, I described the interaction between intonation, word order and object doubling in the realization of InfoStructrure looking at four focus contexts: subject focus, object focus, verb focus and all-focus context in both canonical and scrambled constituent orderings. These interactions were formalized in in a set of information structure constraints in (30).

Second, I looked at the marking of ground material and show how links and tails are mapped into syntactic constituents in Greek. I ultimately argued that the mapping between the given material and syntax is not one-to-one. This free distribution is evident of the independence of syntax from the ground-focus partition of the utterance (Section 5.4.1). In addition, I also looked at the notion of CT (cf. Büring 1997, 2003), which illuminates issues of both focus and ground material. The distributional and contextual effects of CTs show that despite the interpretation of topics as given information and their distributional freedom in preverbal and post-verbal positions, only the preverbal position can maintain their function as links; the post-verbal position results in ungrammaticality. I also presented evidence from CLLD in support of the constraint that preverbal objects must be doubled. This is because only CLLD elements can map into links due to the establishment of a relation of sub-selectional non-monotone anaphoric relation (Hendriks & Dekker 1996) with a member of an established salient discourse set. (cf. also Alexopoulou & Kolliakou 2002). Thus, the function of CLLDed NPs as links provides evidence for disambiguating the S-IS underdeterminacy Hypothesis.

In section 5, I examined the S-IS underdeterminacy hypothesis amongst word order variation against the information structure constraints in (30). The ultimate purpose of this enterprise was to evaluate the relevant prominence of the structural resources which constrain information structure and eventually argue that the prosodic component is the most decisive in the articulation of information structure. I also

tested the S-IS underdeterminacy hypothesis in all-focus contexts and argued that all-focus contexts with Topicalized objects raise interpretational effects that can be compatible in all-focus contexts. In section 6, the notion of focus ambiguity was discussed: focus ambiguity is a discourse effect that is enabled by prosodic means (S-P mapping); however, its absence in certain all-focus contexts is due to the interpretational requirements of the C-I interface which are rigorously upheld by syntax. The discussion of the above brought us to section 7.

In particular, in section 7, I presented as a tentative explanation for the fact that word order appears to play a minor role in the pragmatic structuring of the utterance, the analysis proposed for Greek by Kechagias (2011). This analysis claims that information packaging in Greek is subject to (a) a pragmatic structuring in terms of focus, topic, ground but also (b) a different level, a logico-semantic or conceptual packaging, predicative vs. non-predicative mapping which potentially regulates word order in Greek. This analysis enabled me to provide an attainable explanation of the S-IS mismatches resulting from the S-IS underdeterminacy hypothesis explored in this chapter: (a) the odd behaviour of V-initial orders in narrow focus structures (b) the fact that an all-new information focus can be realized by a predicative structure such as SVO.

CHAPTER 6: CONCLUSIONS

6.1 Concluding Remarks

The present thesis deviates from standard assumptions and previous analyses that focus in Greek is primarily a syntactic manifestation encoded in specific Phrase Structure configurations, i.e., the Focus Phrase. In contrast, this thesis provides a novel approach to focus in Greek, arguing that amongst the mechanisms that languages employ to encode focus, the encoding of focus amid word order variation in Greek is subject to a prosodic-discourse mechanism: focus in Greek is associated at the level of prosody and interpreted in a discourse context; specifically, a direct mapping from prosody to discourse.

To account for the above claim, I proposed a model of componential mapping between syntax, prosody and discourse which accounts for the licensing of focus interpretation in Greek. This model has two mechanisms: (a) the prosody-discourse mapping which constitutes the level at which focus interpretation is encoded, and (b) the S-P mapping, the level where focus is signalled via stress, which consists of two processes: the processes of alignment and misalignment. Mechanism (a) mediates the direct relation between stress and focus and mechanism (b) predicts the position of focus in the language in the prosodic structure. I proposed that the realization of focus by means of stress *always* occurs *rightmost* in prosodic structure, even when focus does not occur in the rightmost syntactic position.This analysis was movitated by prosodic conditions, such as the directionality of stress in Greek, the prosodic status of post-focal material and focus induced effects on prosodic phrasing (Chapter 4).

This proposal accounts uniformly for all instances of focus (clause-initial, internal and right-peripheral) across the sentence. It also crucially predicts that the underdeterminacy with respect to focus interpretation is a consequence of the fact that focus interpretation runs off prosodic structure (Chapter 4).

The proposed model applies accounts uniformly for all instances of the interaction between syntax (word order), prosody (stress) and discourse amid word order variation in Greek (Chapter 5). However, V-initial orders seem to resist a stress-focus correspondence analysis: there is a mismatch between stress assignment and focus interpretation. Stress on the final constituent does not felicitously realize argument focus but is only compatible with a wide all-focus-reading.

The above behaviour is not due to a cartographic ban, since the proposed model predicts flexibility in the realization of arguments, it predicts underdeterminacy in the realization of focused arguments. Hence, I account for the above puzzle by suggesting that it might be the case that word order in Greek is not only regulated by traditional accounts of information packaging, i.e. subject to a pragmatic partitioning, but it may well be the case that word order is subject to more abstract or conceptual strategies under which syntactic constituents map into logico-semantic structures: predicative vs. non-predicative mappings (Cecseg & Kiefer 2009, Kechagias 2011).

The present thesis respects the autonomy of the different components of grammar but at the same time provides a more accurate picture of the discourse notion of focus as an interface phenomenon that is facilitated by the mapping of syntactic structures to representations of information structure.

First, in contrast to cartographic approaches of the Left Periphery (Rizzi 1997, 2004) and modular approaches (Zubizarreta 1998), it was shown that there are no interpretive differences between foci at the LF and PF interfaces but rather focus receives a uniform treatment as an information structure entity, always denoting new or non-presupposed information (in line with Alternative Semantics, Rooth (1992)). This is a novel account of focus in Greek, a language that has been extensively claimed to heavily exploit word order for reasons of information structure, is also interesting from a theoretical cross-linguistic perspective, since apart from work on Italian (Brunetti 2003) and Hausa (Green & Jaggar 2003), there have not been - to my knowledge – any proposals that firmly argue for a unified treatment of focus at the PF and LF components (contra Kiss (1998) and Zubizarreta (1999)). This means that further research is necessary to examine whether there are actually more relatively free-word order languages out there such as Greek which fit into the proposal offered in this thesis. Moreover, the current study examines the distribution of focus across the board and provides a thorough inspection of the left and right periphery (along the middle field).

Furthermore, this work formally recognized that the realization of information structure in Greek utilizes all structural recourses: it is the interplay of syntax (word order), prosody (stress/accent placement) and morphosyntax (clitic-doubling). Athough this happens to be true for a number of languages, the present thesis fully specified and illustrated in a systematic way that the outcomes of the mappings between these components are not always direct and unique but rather subject to structural mismatches which require a different view of the interfaces.

Athough the S-P mapping is direct under the Focus Interpretation Principle (Reihnart 1995, 2006), the mapping between syntax and information structure is indirect, leading to syntax-discourse mismatches: first, the S-IS mapping underdetermines focus interpretation; a certain information structure partition may have more than one realization via different structural arrangements and a given structure may be subject to a number of information structure partitions. For example, the realization of a subject or object or all-focus context may be subject to more than one structural arrangement. Moreover, apart from focus, *ground* marking is also subject to underdeterminacy. The distribution of given information is also flexible as shown in section 5.4. In addition,

To capture the above these mismatches I configured the structural recourses (word order, accent placement and morphosyntax) into a set of information structure constraints which regulate the mapping of syntactic constituents to discourse objects and I showed how these constraints restrict the distribution of information structure categories in different focus contexts (section 5.5). Nevertheless, the outcomes of the interaction of these constraints still substantiate the underdeterminacy hypothesis, showing that a certain context may be realized by more than one information structure partition.

The analysis sketched out in this Chapter does not pursue an OT account although it seems that it is working towards this direction. A reason for that is mainly the fact that although the information structure constraints apply across the board, maybe ranking of constraints might not be the option for Greek. The examination of information structure possibilities of the different word orders shows that it is not a matter of constraint ranking, or number of constraints, to acceptability but rather the fact that different contextualized readings prefer different constraints. So, it may not be a question of ranking at all. This means that in different contexts certain constraints may be more prominent than others. For instance, verb-final structures are generally

dispreferred and ruled out as less acceptable via the VERB FINAL constraint, however, their acceptability increases when the object is CLLD-ed and functions as a link or when the verb is contrastively focused. In this respect, we can actually talk about preferences or choices with respect to word orders and their information structure properties, rather than absolute constraint violations/satisfactions. Neverthess, the above view might be only a speculation and it poses an interesting question for further research.

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